THE OHIO STATE UNIVERSITY

COLLEGE OF AGRICULTURE

BULLETIN

ISSUE FOR 1957 - 1958 SESSIONS

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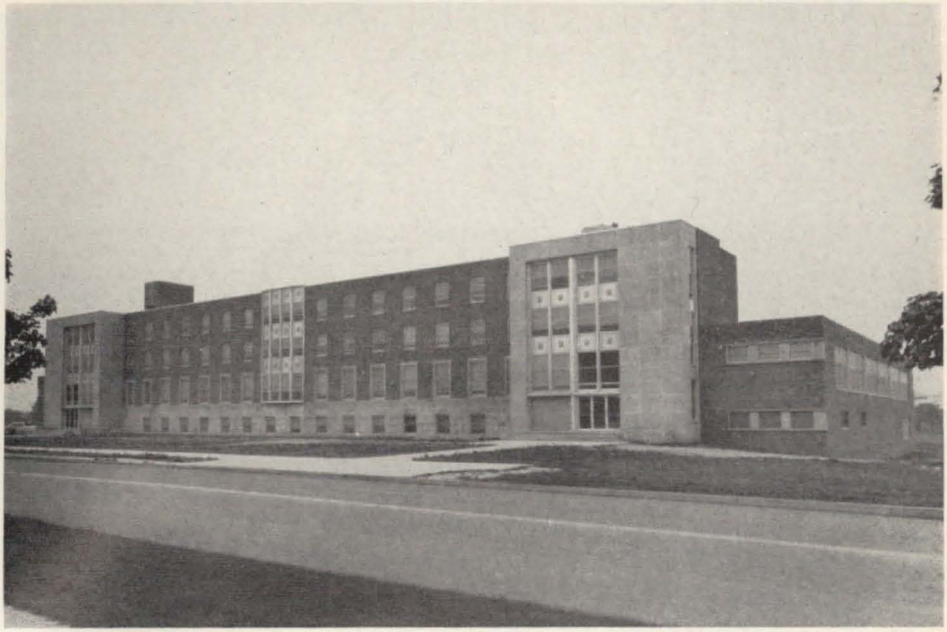
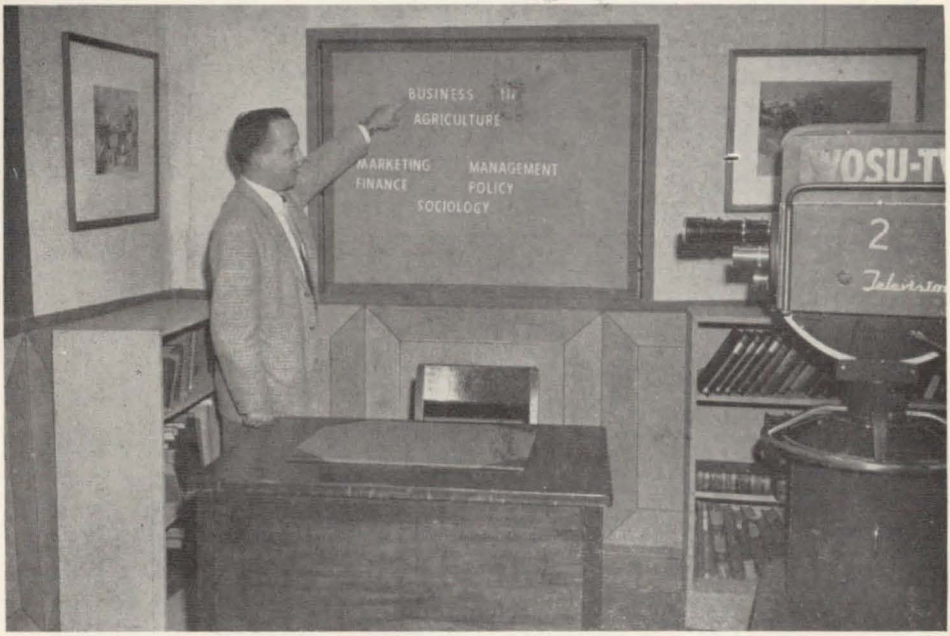
Headquarters for College of Agriculture



Agricultural Administration Building.—The Dean's Office is located in room 100. Help in scheduling, occupational opportunities in Agriculture, personal problems, and placement are handled in the Dean's Office.

Agricultural Economics-Rural Sociology



Agricultural Business, farm management, marketing, consumer buying, finance, policy and rural sociology are areas within the department of Agricultural Economics and Rural Sociology.

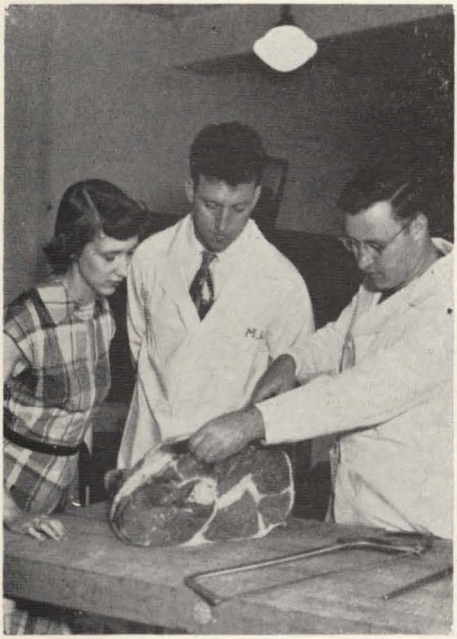
Farming Is An Important Business

Many of the young men return to their home farms and enter into partnership with their fathers—others seek positions as farm managers or in occupations closely related to agriculture.

Tomorrow's Showmen In Review

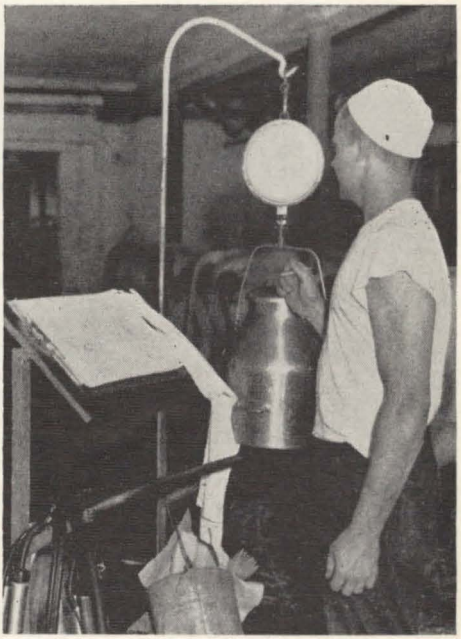
The training of young men to select quality livestock is an important function of the College of Agriculture.

Training In Meats



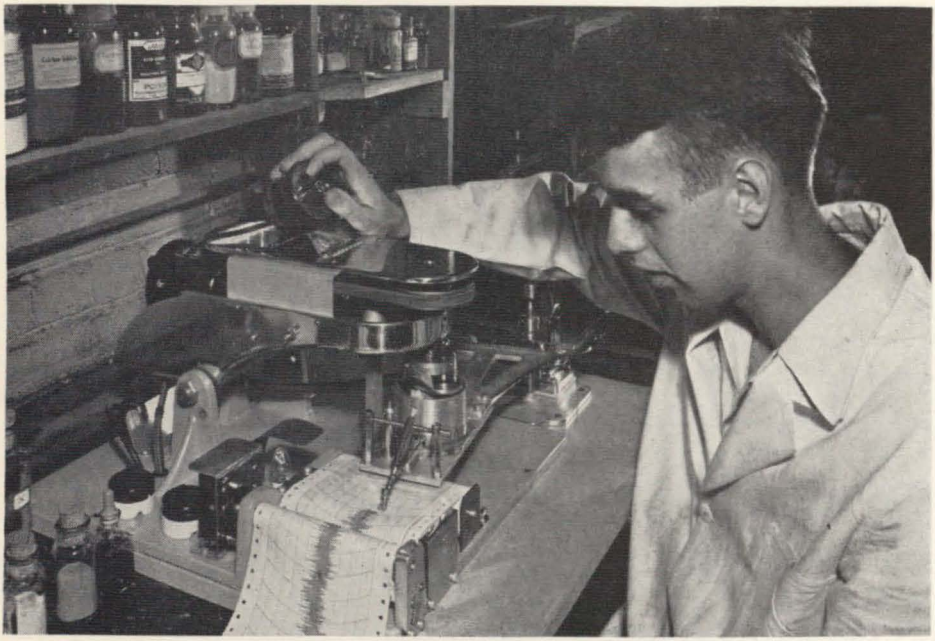
The livestcok producer must understand the quality of meat products demanded by the consumer.

Farming Is Science



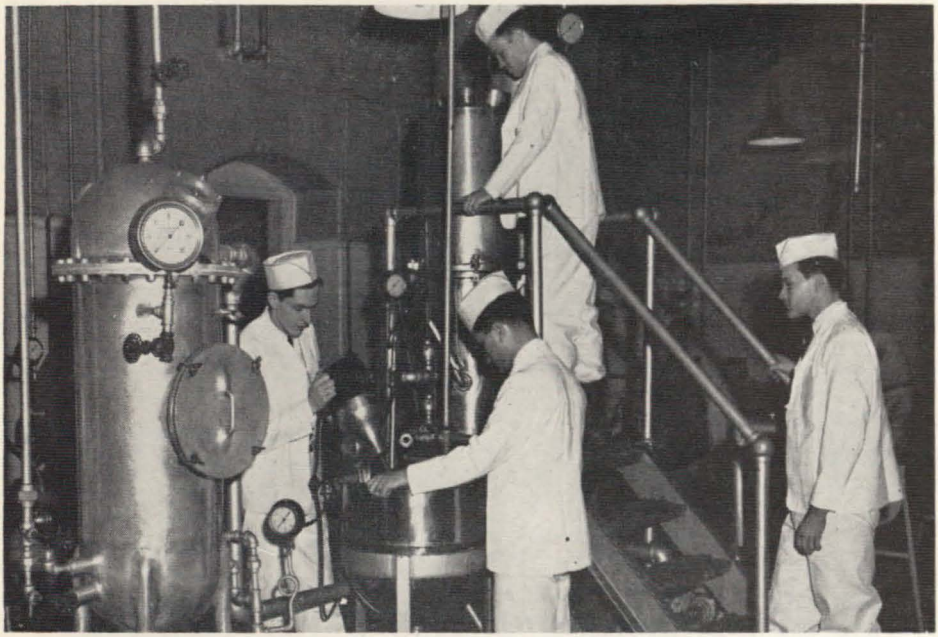
A good herdsman determines the individual production of his herd.

Agricultural Biochemistry



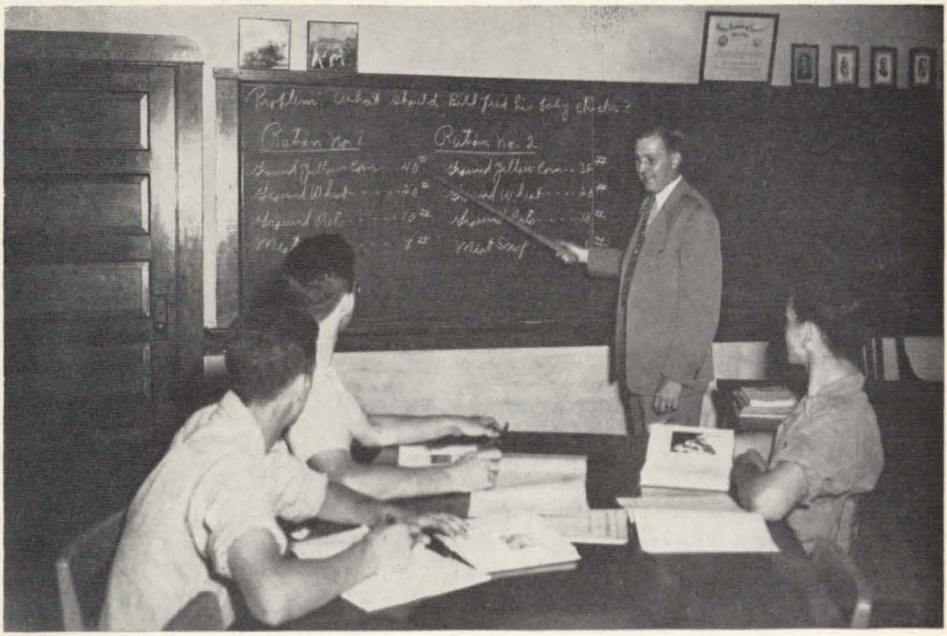
This Depatrment plays an important role in developing an understanding of foods and their uses. The utilization of by-products and means to prevent losses in processing and storage are important to the chemist.

Dairy Technology



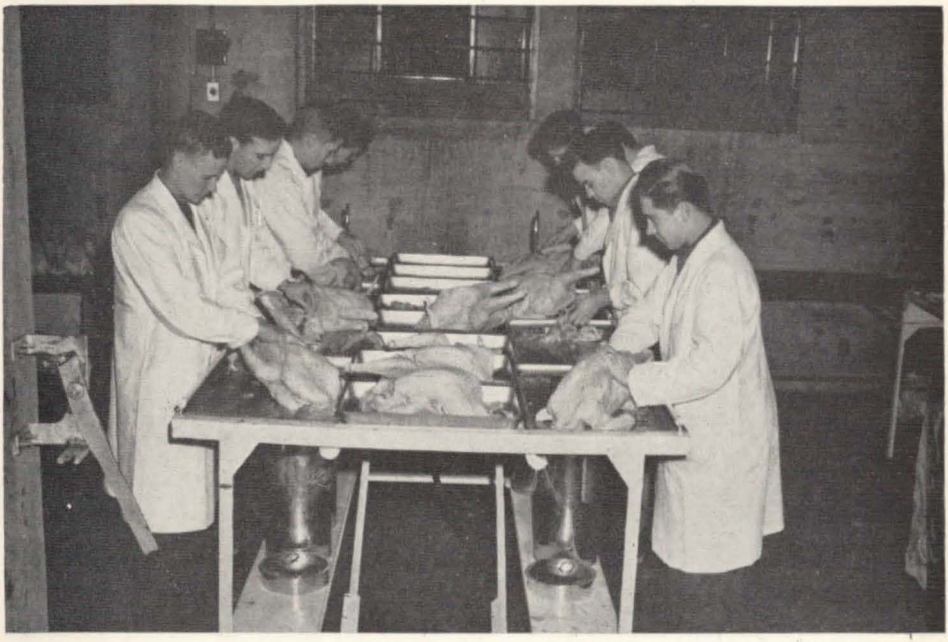
This industry includes the processing and distribution of fluid milk products such as butter, cheese, ice cream, dry milk, condensed and evaporated milk and milk by-products.

Agricultural Education



Teaching Agriculture in high schools offers an unusual opportunity to graduates. Vocational agriculture instructors teach all phases of agriculture and must have farm background and good records in college.

Poultry Science

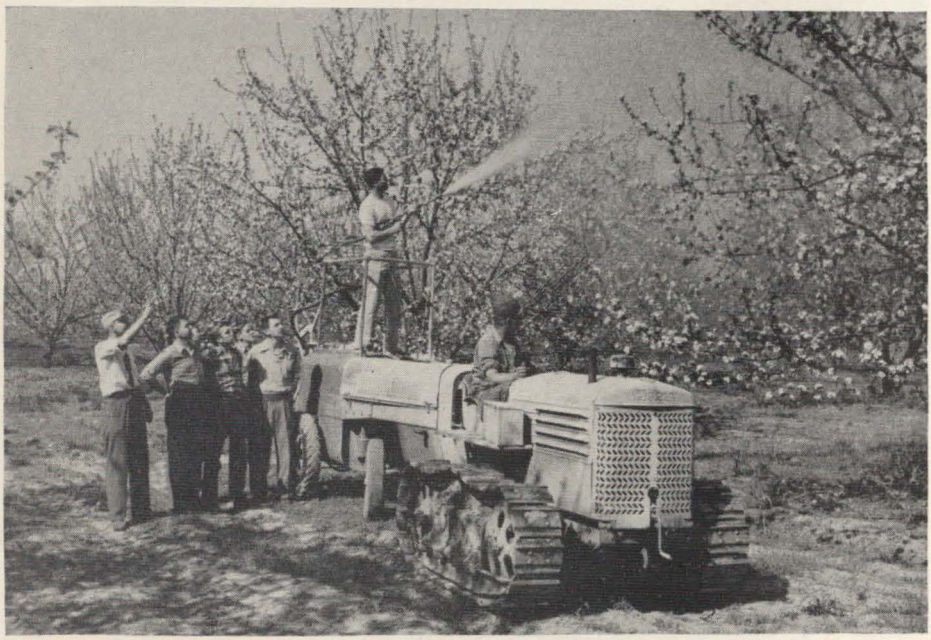


The Poultry Scientist deals with flock management, selections, and breeding. He may engage in research, extension, teaching or farm management or in processing and distribution of poultry and egg production.

Agricultural Engineering

Agricultural Engineering is divided into five major branches; rural electrification, agricultural machinery, farm structures and utilities, processes of agricultural production, and soil and water conservation.

Pomology



Pomology students obtain experience in fruit production, teaching, and research. The application of sprays, pruning, and harvesting are some of the important orchard management operations.

Floriculture

The propagation and marketing of cut flowers and potted plants, or the production and sales of nursery shrubs, constitute large occupational opportunities for florists.

Conservation

The field of Agronomy includes soil management and crop production. An understanding of soil crops, and land uses is important in the business of farming.

One of the Campus Beauty Spots

The Wishing Well at Mirror Lake

COLLEGE OF AGRICULTURE

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THE OHIO STATE UNIVERSITY
COLUMBUS

CALENDAR FOR 1957

JANUARY

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CALENDAR FOR 1958

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UNIVERSITY CALENDAR

1957

SUMMER QUARTER

June 17	Orientation Program for all new students begins.
June 17	Last day for registration and paying fees before classes begin.
June 18	Classes begin, 8:00 A.M.
July 4	No classes.
July 18	Last day for withdrawal with any refund of fees.
July 23, 24	Final Examinations, first term (at last regular class hour).
July 24	First term ends, 12 Midnight.
July 25	Second term begins, 8:00 A.M.
August 1	Schedule cards for Autumn Quarter may be obtained in the Registrar's Office.
August 2	Schedule cards for Autumn Quarter may be filed in College Office.
August 29, 30	Final Examinations (at regular class hour).
August 30	Summer Convocation (Commencement), 9:00 A.M.
August 30	Summer Quarter ends, 12 Midnight.
September 3	Latest day for filing Autumn Quarter schedule cards without penalty.

AUTUMN QUARTER

September 23-30	Orientation Week for all new students. New Freshmen report Sept. 23, 24, 25. New transfer students report Sept. 27.
September 30	Last day for registration and paying fees before classes begin.
October 1	Classes begin, 8:00 A.M.
October 30	Last day for withdrawal with any refund of fees.
November 1	Schedule cards for Winter Quarter may be obtained in Registrar's Office.
November 4	Schedule cards for Winter Quarter may be filed in College Office.
November 8	Latest day for filing Winter Quarter schedule cards without penalty.
November 11	Veterans' Day. No classes.
November 28, 29, 30	Thanksgiving Vacation. No classes.
December 16-20	Final Examinations.
December 20	Autumn Convocation (Commencement), 2:00 P.M.
December 20	Autumn Quarter ends, 12 Midnight.

1958

WINTER QUARTER

January 6	Orientation Program for all new students begins.
January 6	Last day for registration and paying fees before classes begin.
January 7	Classes begin, 8:00 A.M.
January 31	Schedule cards for Spring Quarter may be obtained in the Registrar's Office.
January 31	Last day for withdrawal with any refund of fees.
February 3	Schedule cards for Spring Quarter may be filed in the College Office.
February 7	Latest day for filing Spring Quarter schedule cards without penalty.
February 22	Washington's Birthday. No classes.
March 17-20	Final Examinations.
March 20	Winter Convocation (Commencement), 2:00 P.M.
March 20	Winter Quarter ends, 12 Midnight.

SPRING QUARTER

March 31	Orientation Program for all new students begins.
March 31	Last day for registration and paying fees before classes begin.
April 1	Classes begin, 8:00 A.M.
April 23	Last day for withdrawal with any refund of fees.
May 1	Schedule cards for Summer Quarter may be obtained in the Registrar's Office.
May 2	Schedule cards for Summer Quarter may be filed in the College Office.
May 9	Latest day for filing Summer Quarter schedule cards without penalty.
May 30	Memorial Day. No classes.
June 9-13	Final Examinations.
June 13	Spring Convocation (Commencement).
June 13	Spring Quarter ends, 12 Midnight.

June 19	Summer Quarter (1958) classes begin.
July 23	First term ends.
July 24	Second term begins.
August 29	Summer Quarter ends.

TABLE OF CONTENTS

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Residence: 43 Columbus St., Canal Winchester—TE-7-4140

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Residence: 71 W. Beaumont Rd.—AM-2-3183

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Office: Administration Building—AX-9-3148, Ext. 100
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Office: Administration Building—AX-9-3148, Ext. 372
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Office: 309 Administration Building—AX-9-3148, Ext. 8201
Residence: 1876 Coventry Rd.—HU-8-7437

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Residence: 1230 Glenn Ave.—HU-8-1770

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Office: 120 McPherson Chemical Laboratory—AX-9-3148, Ext. 301;
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Office: 100 Agricultural Administration Building—AX-9-3148, Ext. 326
Residence: 2310 Lane Rd.—HU-8-4637

Assistant Dean and Group Leader, American-Indian Team
THOMAS SCOTT SUTTON
Office: 100 Agricultural Administration Building—AX-9-3148, Ext. 326
Residence: College of Agriculture, Ludhiana, Punjab, India

Assistant Dean and Secretary.....JOHN T. MOUNT
Office: 100 Agricultural Administration Building—AX-9-3148, Ext. 326
Residence: 567 Chatham Rd.—AM-3-0742

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1956-1957

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[2] Agricultural Extension Service.
[3] See Ohio Agricultural Experiment Station Staff.

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ROBIN C. BURRELL, Ph.D.	[3]*Professor of Agricultural Biochemistry*
DELBERT M. BYG, B.Sc. in Agr. Engr.	*Instructor in Agricultural Engineering Extension*
VERN R. CAHILL, Ph.D.	[3]*Associate Professor of Animal Science*
JAMES L. CALDWELL, M.S.	[3]*Assistant Professor of Agricultural Extension and Horticulture*
CHARLES E. CALHOUN, B.Sc.	[3]*Instructor in Animal Science*
EDNA CALLAHAN, M.A.	[2]*Professor of Home Economics*
H. R. CAPENER, Ph.D.	[2]*Associate Professor of Rural Sociology*
NEAL R. CARPENTER, M.S.	[2]*Instructor, Extension Farm Managment Specialist*
L. C. CHADWICK, Ph.D.	[3]*Professor of Horticulture*
JAMES CHAPMAN	[2]*Information Specialist*
CARLTON F. CHRISTIAN, M.Sc.	[2]*Associate Professor, Extension Editor*
PAUL C. CLAYTON, Ph.D.	[2]*Assistant Professor of Poultry Science*
BEATRICE CLEVELAND, B.Sc. in H.E.	[2]*Assistant State 4-H Club Leader*

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JACK H. CLINE, Ph.D.	*Instructor in Animal Science*
THEO H. COLEMAN, M.S.	*Instructor in Poultry Science*
DONALD COMIN, M.Sc.	[1]*Assistant Professor of Horticulture*
GEORGE B. CRANE, M.Sc.	[2]*Assistant Director of Agricultural Extension*
M. EUGENE CRAVENS, JR., Ph.D.	*Associate Professor of Agricultural Economics*
RAYMOND E. CRAY, M.Sc.	[3]*Professor of Poultry Science*
JOHN L. CRITES, M.S.	*Instructor in Zoology*
CLIFFORD R. CUTRIGHT, Ph.D.	[3]*Professor of Zoology and Entomology*
EVERETT L. DAKAN, B.S.	[3]*Chairman and Professor Emeritus of Poultry Science*
RALPH H. DAVIDSON, Ph.D.	*Associate Professor of Zoology and Entomology*
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FOREST W. DEAN, B.Sc. in For.	[2]*Assistant Professor of Horticulture*
F. E. DEATHERAGE, Ph.D.	[3]*Chairman and Professor of Agricultural Biochemistry*
FLOYD DELASHMUTT, B.Sc. in Agr.	[2]*Professor Emeritus of Agricultural Economics and Rural Sociology*
DWIGHT M. DELONG, Ph.D., D.Sc.	*Professor of Zoology and Entomology*
LOIS M. DENEKE, B. S.	[2]*Assistant Professor of Home Economics*
OSEE HUGHES DEWEY, M.S.	*Associate Professor Emeritus of Home Economics*
O. D. DILLER, Ph.D.	*Assistant Professor of Forestry*
ROBERT M. DIMIT, Ph.D.	[2]*Associate Professor of Agricultural Economics*
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DAVID R. DODD, Ph.D.	[2]*Professor Emeritus of Agronomy*
HARRY A. DONOHO, Ph.D.	[1]*Assistant Professor of Dairy Science*
JAMES E. DOUGAN, M.Sc.	*Instructor in Agricultural Education*
RILEY DOUGAN, Ph.D.	*Assistant Professor of Agricultural Economics*
GUY DOWDY, M.Sc.	[2]*Professor of Agricultural Extension*
EDWARD L. DROLLINGER, B.S.	[2]*Instructor in Horticulture*
WINSTON E. DUNHAM, Ph.D.	*Associate Professor of Entomology*
EUGENE H. DUSTMAN, Ph.D.	*Associate Professor of Zoology*
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CLAYTON WAYNE ELLETT, Ph.D.	*Assistant Professor of Botany and Plant Pathology*
FORDYCE ELY, Ph.D.	[3]*Chairman and Professor of Dairy Science*
JOHN I. FALCONER, Ph.D.	[3]*Professor Emeritus of Agricultural Economics and Rural Sociology*
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FRANK W. FISK, Ph.D.	*Associate Professor of Zoology and Entomology*
JEFFERSON FLOWERS, M.Sc.	*Instructor in Agronomy*
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ALMA GARVIN, M.A.	[2]*Professor Emeritus of Home Economics*
CARL W. GAY, D.V.M., B.S.A.	*Professor Emeritus of Animal Science*
ALBERT F. GEHRES, B.Sc. in Agr.	*Assistant State 4-H Club Leader*
GARETH E. GILBERT, Ph.D.	*Instructor in Botany and Plant Pathology*
WILLIAM E. GILL, B.Sc. in Agr.	[2]*Assistant Professor of Agricultural Engineering*
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LOIS GILMORE, Ph.D.	[3]*Professor of Home Economics*
MAURICE GILTZ, Ph.D.	*Assistant Professor of Zoology*
GEORGE R. GIST, B.Sc.	[2]*Assistant Professor of Agronomy*
D. LYLE GOLEMAN, Ph.D.	[2]*Assistant Professor of Entomology*

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ERNEST E. GOOD, Ph.D.	*Assistant Professor of Zoology*
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WILBUR GOULD, Ph.D.	[3]*Assistant Professor of Horticulture*
AGLAEA GRAMMEN, M.S.	*Instructor in Home Economics*
WILLIAM D. GRAY, Ph.D.	*Professor of Botany and Plant Pathology*
MARY E. GREEN, Ph.D.	*Assistant Professor of Home Economics*
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GILBERT S. GUILER, M.S.	*Instructor in Agricultural Education*
CHARLES HAAS, M.Sc.	[2]*Supervisor of Agricultural Extension*
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HERBERT HADLEY, M.S.	*District Supervisor, Agricultural Extension*
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CLOYCE L. HANKINSON, Ph.D.	*Assistant Professor of Dairy Technology*
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KENNETH A. HARKNESS	*Instructor in Agricultural Engineering*
THOMAS D. HARMAN, Ph.D.	*Assistant Professor of Dairy Technology*
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H. W. HARSHFIELD, M.S.	[2]*State 4-H Club Leader*
HOWARD A. HARTLEY, M.S.	*Instructor in Dairy Technology*
FRED O. HARTMAN, Ph.D.	[3]*Associate Professor of Horticulture*
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GEORGE F. HENNING, Ph.D.	[3]*Professor of Agricultural Economics*
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PHILIP C. HINTZ, M.S.	*Instructor in Dairy Technology*
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THORVALD KRISTOFFERSEN, Ph.D. *Assistant Professor of Dairy Technology*
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GUY W. MILLER, M.Sc. — [2]*Professor of Agricultural Economics and Rural Sociology*
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CLYDE R. NEISWANDER, Ph.D. — [3]*Professor of Zoology and Entomology*
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ALBERT ORCUTT, Ph.D. — [2]*Assistant Professor, Extension Rural Sociology*
VIRGIL OVERHOLT, B.Sc. in Agr. — [2]*Professor Emeritus of Agricultural Engineering*
MERTON D. OYLER, Ph.D. — *Professor of Rural Sociology*
ELTON F. PADDOCK, Ph.D. — [3]*Associate Professor of Botany and Plant Pathology*
WENDELL PADDOCK, M.S. — *Professor Emeritus of Horticulture*
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WILLIAM H. PALMER, M.Sc. — [2]*State Leader Emeritus, 4-H Club Work*
J. B. PARK, D.Sc. — [3]*Professor Emeritus of Agronomy*
THADDEUS H. PARKS, M.Sc. — [2]*Professor Emeritus of Zoology and Entomology*
OLIVE PARRISH, B.Sc. — [2]*Assistant Professor, Extension*
J. VERNON PATTERSON, B.Sc. in Agr. — [2]*Associate Professor of Horticulture*
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RONALD H. POLLOCK, M.S. — *Instructor in Agricultural Economics; Counselor, College of Agriculture*
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MINNIE PRICE, M.A. — [2]*Professor Emeritus of Home Economics and State Leader, Agricultural Extension Service*
INEZ PRUDENT, Ph.D. — [3]*Associate Professor of Home Economics*
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HARRY C. RAMSOWER, D.Ed. — [2]*Director Emeritus of Agricultural Extension*

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EVERETT P. REED, M.Sc. — [2]*Associate Professor of Agronomy*

CARL R. REESE, Ph.D. — *Associate Professor of Zoology and Entomology*

CHARLES A. REESE, B.Sc. in Ent. — [2, 3]*Assistant Professor of Zoology and Entomology*

KENNETH C. REISCH, M.Sc. — *Instructor in Horticulture and Forestry*

VICTOR H. RIES, M.Sc. — [2]*Professor Emeritus of Horticulture*

DAVID C. RIFE, Ph.D. — *Professor of Zoology and Entomology*

ROY W. RINGS, Ph.D. — *Associate Professor of Zoology and Entomology*

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GORDON J. RYDER, Ph.D. — [2]*Assistant Professor of Agronomy*

LEWIS C. SABOE, Ph.D. — [3]*Associate Professor of Agronomy*

HOMER C. SAMPSON, Ph.D. — *Professor Emeritus of Botany and Plant Pathology*

JACOB P. SCHMIDT, B.Sc. in Agr. — [2]*Supervisor of Farmers Institutes*

JOHN A. SCHMITT, Ph.D. — *Instructor in Botany*

AUGUST F. SCHMITTHENNER, Ph.D. — [3]*Assistant Professor of Botany and Plant Pathology*

C. J. SCHOLLENBERGER, B.A. — [3]*Assistant Professor of Agronomy*

D. J. SCHOPPE, M.S. — *Assistant Professor of Home Economics*

GLENN O. SCHWAB, Ph.D. — *Professor of Agricultural Engineering*

ROBERT B. SCHWART, M.Sc. — [2]*Instructor in Agricultural Economics and Rural Sociology*

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DALE A. SEIBERLING, M.Sc. — *Instructor in Dairy Technology*

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R. W. SHERMAN, Ph.D. — [3]*Professor of Agricultural Economics*

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JOHN H. SITTERLEY, Ph.D. — *Professor of Agricultural Economics*

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JOHN A. SLIPHER, B.Sc. — [2]*Professor of Agronomy (Extension Conservationist)*

AGNES SMITH, M.Sc. — *Assistant Professor of Home Economics*

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MABEL SPRAY, M.S. — [2]*Assistant Professor of Home Economics*

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CHESTER E. SWANK, B.S. — [2]*Instructor in Agricultural Economics*

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CLARENCE E. TAFT, Ph.D.	*Professor of Botany and Plant Pathology*
ALMA TAPSCOTT, M.A.	*Assistant Professor of Home Economics*
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LOA D. WHITFIELD, M.A.	[2]*State Leader, Agricultural Extension Service*
CHARLES J. WILLARD, Ph.D.	[3]*Professor of Agronomy*
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J. DEAN WILSON, Ph.D.	[3]*Professor of Botany and Plant Pathology*
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ALDEN R. WINTER, Ph.D.	[3]*Professor of Poultry Science*
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W. R. ANDERSON, M.F.	*Assistant Professor in Forestry*
W. H. ANDREWS, Ph.D.	[1-3]*Assistant Professor in Rural Sociology*
M. A. BACHTELL, B.S.	*Associate Professor in Agronomy*
RAYMOND BAILEY, M.Sc.	*Instructor in Agricultural Economics*
R. H. BAKER, Ph.D.	[1-3]*Associate Professor in Agricultural Economics*
R. D. BARDEN, M.S.	*Chairman and Professor of Agricultural Engineering*
E. E. BARNES, Ph.D.	*Assistant Professor in Agronomy*
PAUL BARRETT	*Public Relations*
GEORGE BART, M.Sc.	*Instructor in Botany and Plant Pathology*
M. T. BAULDAUFF, Ph.D.	*Assistant Professor in Horticulture*
E. F. BAUMER, Ph.D.	[1-3]*Associate Professor in Agricultural Economics*
RALPH BAZLER, B.Sc. in Agr.	[1, 3]*Field Supervisor*
J. M. BEATTIE, Ph.D.	*Associate Professor in Horticulture*
D. S. BELL, M.S.	[3]*Professor in Animal Science*
O. G. BENTLEY, Ph.D.	[3]*Associate Professor in Animal Science*
RAYMOND BLACKMORE, Ph.D.	[1, 3]*Assistant Professor in Horticulture*
R. H. BLOSSER, M.S.	[1, 3]*Associate Professor in Agricultural Economics*
CHARLES E. BODE, M.Sc.	*Cereal Technician in Agronomy*
H. L. BORST, Ph.D. *U.S.D.A., Agronomy*	[4]*Project Supervisor, Soil Conservation, Coop.*
GLADYS BRANEGAN CHALKLEY, Ph.D. *Economics*	[1, 3]*Professor Emeritus in Home*
N. WILSON BRITT, Ph.D.	*Assistant Professor of Zoology and Entomology*
H. D. BROWN, Ph.D.	[1, 3]*Professor in Horticulture*
W. N. BROWN, Ph.D.	[1, 3]*Professor in Horticulture*
R. C. BURRELL, Ph.D.	[1, 3]*Professor in Animal Science*
JOHN BUSHNELL, Ph.D.	*Associate Professor in Horticulture*
V. R. CAHILL, Ph.D.	[1-3]*Associate Professor in Animal Science*
RICHARD D. CARTER, M.Sc.	*Instructor in Poultry Science*
L. C. CHADWICK, Ph.D.	[1, 3]*Professor in Horticulture*
C. R. COLE, D.V.M., Ph.D.	[1]*Associate Professor in Veterinary Medicine*
DONALD COMIN, M.S.	[3]*Assistant Professor in Horticulture*

[1] Ohio Agricultural Experiment Station Staff stationed at Columbus.
[3] See College of Agriculture Faculty.
[4] In cooperation with U. S. Department of Agriculture.

H. R. Conrad, Ph.D.	*Instructor in Dairy Science*
M. E. Cravens, Ph.D.	*Associate Professor in Agricultural Economics*
R. E. Cray, M.S.	[1, 3]*Professor in Poultry Science*
C. R. Cutright, Ph.D.	[3]*Associate Professor in Entomology*
E. L. Dakan, B.S.	[1, 3]*Professor in Poultry Science*
R. R. Davis, Ph.D.	*Assistant Professor in Agronomy*
F. E. Deatherage, Ph.D.	[1, 3]*Professor in Animal Science*
O. D. Diller, Ph.D.	[3]*Chairman and Professor in Forestry*
D. R. Dodd, Ph.D.	[1, 3]*Associate Professor in Agronomy*
W. E. Dunham, Ph.D.	[1, 3]*Associate Professor in Entomology*
B. H. Edington, D.V.M. *(Reynoldsburg)*	*Chairman and Professor in Veterinary Science*
C. W. Ellenwood	*Assistant Professor in Horticulture*
Fordyce Ely, Ph.D.	[1, 3]*Chairman and Professor in Dairy Science*
L. C. Ferguson, D.V.M., Ph.D.	[1]*Associate Professor in Dairy Science*
Nathan Fechheimer, M.Sc.	*Instructor in Dairy Science*
Jessie E. Fisher, Ph.D.	*Assistant Professor of Home Economics*
Alice Forsythe, M.S.	*Instructor in Home Economics*
Norma A. Frank, M.S.	*Instructor in Veterinary Science (Reynoldsburg)*
Homer Gall	[1]*Assistant in Dairy Science*
J. A. Gibbs, M.Sc.	*Assistant Professor in Forestry*
Lois D. Gilmore, Ph.D.	[1, 3]*Professor in Home Economics*
Lois D. Gilmore, Ph.D.	[1, 3]*Associate Professor in Home Economics*
Truman Goins, M.S.	[1]*Instructor in Agricultural Engineering*
I. A. Gould, Ph.D.	[1, 3]*Professor in Dairy Science*
W. A. Gould, Ph.D.	[1, 3]*Assistant Professor in Horticulture*
John Hacskaylo, Ph.D.	*Assistant Professor of Forestry*
John P. Hamill, B.Sc.	*Instructor, S. E. Substation*
W. J. Harper, Ph.D.	[1, 3]*Assistant Professor in Dairy Science*
F. O. Hartman, Ph.D.	[1, 3]*Associate Professor in Horticulture*
James R. Hay, D.V.M.	*Assistant Professor in Agronomy*
J. L. Haynes, Ph.D.	*Professor in Agronomy*
J. H. Helwig, D.V.M., M.S.	[1]*Professor in Veterinary Science*
G. F. Henning, Ph.D. *and Rural Sociology*	[1, 3]*Professor in Agricultural Economics*
James E. Henry, B.Sc.	*Instructor in Agricultural Engineering*
Helene Heye, Ph.D.	[1, 3]*Professor in Home Economics*
E. T. Hibbs, Ph.D.	*Assistant Professor in Entomology*
J. W. Hibbs, Ph.D.	*Professor in Dairy Science*
R. G. Hill, Jr., Ph.D.	[3]*Assistant Professor in Horticulture*
Ruth Hoeflin, Ph.D.	*Associate Professor in Home Economics*
I. C. Hoffman, Ph.D.	*Assistant Professor in Horticulture*
Nicholas Holowaychuk, Ph.D.	*Associate Professor in Agronomy*
F. S. Howlett, Ph.D.	[1, 3]*Chairman and Professor in Horticulture*
Guy A. Hummon, B.S.	*Assistant to the Director of Public Relations*
C. H. Hunt, Ph.D.	*Associate Professor in Animal Science*
Fern Hunt, M.S.	*Instructor in Home Economics*
H. T. Hurst, M.S.	[1]*Instructor in Agricultural Engineering*
R. G. Jaap, Ph.D.	[1, 3]*Professor in Poultry Science*
W. H. Johnson, M.S.	[1]*Assistant Professor of Agricultural Engineering*
L. A. Kauffman, M.S.	[1, 3]*Chairman and Professor in Animal Science*
N. B. King, D.V.M.	*Instructor in Veterinary Science (Reynoldsburg)*
D. C. Kiplinger, Ph.D.	[1, 3]*Associate Professor in Horticulture*
L. T. Kissell, B.A.	[4]*Jr. Chemist, Coop. U.S.D.A., Agronomy*

[1] Ohio Agricultural Experiment Station Staff stationed at Columbus.

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[4] In cooperation with U. S. Department of Agriculture.

R. G. KLINE, Ph.D.	*Assistant Professor of Agricultural Economics*
E. W. KLOSTERMAN, Ph.D	*Associate Professor in Animal Science*
L. L. KNUDSEN, Ph.D.	*Assistant Professor in Forestry*
THOR KOMMEDAHL, Ph.D.	*Assistant Professor in Botany and Plant Pathology*
W. W. KONKLE, B.A.	*Instructor and Field Editor (Public Relations)*
F. R. KOUTZ, D.V.M., M.S.	[1]*Associate Professor in Veterinary Science*
WILLIAM E. KRAUSS, Ph.D.	*Associate Director of Administration*
W. R. KRILL, B.S., D.V.M.	[1]*Professor in Veterinary Science*
LAWRENCE E. KUNKLE, M.S.	[1-3]*Professor in Animal Science*
C. A. LAMB, Ph.D.	[3]*Associate Chairman and Professor in Agronomy*
EDWARD J. LAZEAR, Ph.D.	*Assistant Professor in Dairy Science*
JAMES LEWIS, M.S.	*Instructor in Agricultural Economics*
G. C. LISTON, B.S.	*Technical Editor*
JOHN L. LOCKWOOD, Ph.D.	*Assistant Professor in Botany*
T. M. LUDWICK, Ph.D.	[1-3]*Professor in Dairy Science*
MORLEY MCCARTNEY, Ph.D.	[3]*Professor and Associate Chairman of Poultry Science*
F. B. MCCORMICK, Ph.D.	[1]*Assistant Professor in Agricultural Economics and Rural Sociology*
G. S. MECHLING, D.V.M.	[1]*Assistant in Veterinary Science*
H. J. MEDERSKI, Ph.D.	*Assistant Professor in Agronomy*
J. W. METEER, M.F.	*Assistant Professor in Forestry*
B. S. MEYER, Ph.D.	[1, 3]*Chairman and Professor in Botany and Plant Pathology*
D. F. MILLER, Ph.D.	[1, 3]*Chairman and Professor in Entomology*
G. H. MITCHELL, Ph.D.	*Assistant Professor of Agricultural Economics*
H. R. MOORE, M.S.	[1, 3]*Associate Professor in Agricultural Economics*
H. H. MORSE, Ph.D.	[1]*Associate Professor in Agronomy*
J. L. MORTENSEN, Ph.D.	*Assistant Professor of Agronomy*
A. L. MOXON, Ph.D.	[3]*Associate Chairman and Professor in Animal Science*
EDWARD C. NABER, Ph.D.	*Assistant Professor in Poultry Science*
C. R. NEISWANDER, Ph.D.	[3]*Associate Chairman and Professor in Entomology*
R. B. NEISWANDER, Ph.D.	[3]*Associate Professor in Entomology*
CHRISTINE NEWARK, Ph.D.	[1, 3]*Professor in Home Economics*
RICHARD R. NEWBERG, Ph.D.	*Associate Professor of Agricultural Economics*
E. F. PADDOCK, Ph.D.	[1, 3]*Assistant Professor in Botany and Plant Pathology*
J. L. PARSONS, Ph.D.	*Assistant Professor of Agronomy*
MARY B. PATTON, Ph.D.	[1, 3]*Associate Chairman and Professor in Home Economics*
J. H. PETRO, B.S.	[1]*Assistant Professor in Agronomy*
J. B. POLIVKA, Ph.D.	*Assistant Professor in Entomology*
W. D. POUNDEN, Ph.D.	*Associate Chairman and Professor in Veterinary Science*
A. D. PRATT, Ph.D.	*Associate Professor in Dairy Science*
R. E. REBRASSIER, D.V.M., M.S.	[1]*Professor in Veterinary Science*
KENNETH C. REISCH, M.Sc.	[1, 3]*Instructor in Horticulture*
D. C. RIFE, Ph.D.	[1, 3]*Professor in Animal Science*
R. W. RINGS, Ph.D.	[4]*Assistant Professor (Coop. U.S.D.A.), Entomology*
C. F. ROGERS, Ph.D.	*Assistant Professor in Agronomy*
HUGH W. ROGERS, B.Sc.	*Instructor, Madison County Experiment Farm*
WARREN ROLLER, M.S.	*Instructor in Agricultural Engineering*
H. A. RUNNELS, M.S.	*Assistant Professor in Botany and Plant Pathology*
L. C. SABOE, Ph.D.	[1, 3]*Associate Professor in Agronomy*
R. L. SARLES, M.F.	*Instructor in Forestry*
J. D. SAYRE, Ph.D.	[4]*Physiologist (Coop. U.S.D.A.), Agronomy*

[1] Ohio Agricultural Experiment Station Staff stationed at Columbus.

[3] See College of Agriculture Faculty.

[4] In cooperation with U. S. Department of Agriculture.

A. F. SCHMITTHENNER, Ph.D.	*Assistant Professor of Botany and Plant Pathology*
C. J. SCHOLLENBERGER, B.A.	[4]*Assistant Professor (Coop. U.S.D.A.), Agronomy*
DOROTHY D. SCOTT, Ph.D.	*Professor and Chairman of Home Economics*
JOHN W. SHARP, Ph.D.	*Assistant Professor in Agricultural Economics*
E. T. SHAUDYS, Ph.D.	*Assistant Professor of Agricultural Economics*
R. W. SHERMAN, Ph.D.	[1, 3]*Professor in Agricultural Economics*
R. H. SIMON, M.A.	*Assistant Professor in Agronomy*
JOHN H. SITTERLEY, Ph.D.	*Professor in Agricultural Economics and Rural Sociology*
W. L. SLATTER, Ph.D.	[1, 3]*Associate Professor in Dairy Science*
J. P. SLEESMAN, Ph.D.	*Associate Professor in Entomology*
MERVIN G. SMITH, Ph.D.	*Chairman and Professor in Agricultural Economics and Rural Sociology*
P. E. SMITH, Ph.D.	*Associate Professor of Agronomy*
JAMES F. SPURRIER, B.S.	*Instructor in Animal Science*
DONALD STEWARD, M.S.	*Instructor in Agricultural Economics*
G. H. STRINGFIELD, M.S.	[4]*Senior Agronomist, Coop. U.S.D.A.*
P. H. STRUTHERS, Ph.D.	*Assistant Professor of Agronomy*
T. S. SUTTON, Ph.D.	[1, 3]*Professor in Animal Science*
G. S. TAYLOR, Ph.D.	[1, 3]*Assistant Professor in Agronomy*
H. S. TEAGUE, Ph.D.	[3]*Assistant Professor in Animal Science*
L. E. THATCHER, Ph.G.	*Associate Professor in Agronomy*
D. L. THOMAS, D.V.M.	*Instructor in Veterinary Science*
R. C. THOMAS, M.A.	*Assistant Professor in Botany and Plant Pathology*
J. ROBERT TOMPKIN, Ph.D.	*Assistant Professor in Agricultural Economics*
DOROTHY P. TYRRELL, M.A.	[1]*Instructor in Home Economics*
WILLIAM TYZNIK, Ph.D.	[1-3]*Associate Professor in Animal Science*
W. G. VENZKE, D.V.M., Ph.D.	*Assistant Professor in Dairy Science*
E. H. VOELLER, B.S.	[1]*Assistant Professor in Dairy Science*
G. W. VOLK, Ph.D.	[1, 3]*Chairman and Professor in Agronomy*
I. W. WADE, B.S.	*Instructor in Forestry*
R. G. WASHBURN, B.A.	*Instructor in Dairy Science*
WILLIAM A. WAYT, Ph.D.	*Assistant Professor in Agricultural Economics and Rural Sociology*
C. R. WEAVER, Ph.D.	*Assistant Professor in Entomology*
ELAINE K. WEAVER, Ph.D.	[1, 3]*Associate Professor in Home Economics*
H. H. WEISER, Ph.D.	[1]*Professor in Animal Science*
C. J. WILLARD, Ph.D.	[1, 3]*Professor in Agronomy*
H. C. WILLIAMS, M.S.	*Assistant Professor of Agricultural Economics*
J. D. WILSON, Ph.D.	*Professor in Botany and Plant Pathology*
J. H. WILSON, B.S.	*Instructor in Agronomy*
RICHARD F. WILSON, Ph.D.	*Associate Professor in Animal Science*
A. R. WINTER, Ph.D.	[1, 3]*Professor in Poultry Science*
H. F. WINTER, B.S.	*Assistant Professor in Botany and Plant Pathology*
T. F. WONDERLING, B.Sc.	*Superintendent of Outlying Farms*
JOHN WYNE, B.S.	*Instructor in Poultry Science*
W. T. YAMAZAKI, Ph.D.	*Associate Chemist, Coop. U.S.D.A.*
H. C. YOUNG, Ph.D.	*Associate Chairman and Professor in Botany and Plant Pathology*

[1] Ohio Agricultural Experiment Station Staff stationed at Columbus.
[3] See College of Agriculture Faculty.
[4] On leave.

I. THE UNIVERSITY AND ITS SERVICES

LOCATION

The Ohio State University is situated some two and one-half miles north of the center of the city of Columbus, the capital of Ohio, and a city of over 400,000 persons. The main campus of the University lies west of High Street between Eleventh and Woodruff Avenues. From the Union Station or the center of Columbus (Broad Street and High Street) the campus may be reached by either the North High Street or the Neil Avenue busses.

The University is supported primarily by appropriations from the State government, with Federal assistance. The University has some 2,555 total acres of land, with 417 acres in the campus, 383 in the University airport, 295 in the golf courses, and 1,460 acres in farms. The total value of the land, buildings, and equipment of the University is currently some $88,265,608.12. The University has its own radio-television station (WOSU-TV) and a daily student-operated newspaper.

HISTORY

The Ohio State University was founded in 1870 as a land-grant institution and designated as the Ohio Agricultural and Mechanical College. This new school admitted its first students in 1873. The University's present name was received in 1878, which was also the year the first class was graduated. The original organization of the University consisted of ten departments. By 1883, the University was organized into four schools: Agriculture, Arts and Philosophy, Engineering, and Science. In 1896, six independent colleges were organized: Agriculture, Arts, Philosophy and Science, Engineering, Law, Pharmacy, and Veterinary Medicine. The Graduate School was created in 1902 as a division of the College of Arts, Philosophy and Science, and became a separate school in 1911. Currently, slightly more than three-quarters of a century later, there are some eighty departments of instruction and a faculty numbering 1400 persons. More than 250 different programs of study ranging from a broad liberal education to many specialized fields and professions are offered by the University.

THE PRESENT ORGANIZATION OF THE UNIVERSITY

The present organization of the University represents both administrative convenience and educational design. The departments of instruction of the University are grouped into divisions termed "Colleges." The Ohio State University now comprises ten Colleges and a Graduate School, each under the administration of a Dean and College Faculty, as follows: Graduate School, College of Agriculture (including the School of Home Economics), College of Arts and Sciences (including the School of Journalism and the School of Optometry), College of Commerce and Administration (including the School of Social Administration), College of Dentistry, College of Education (including the School of Fine and Applied Arts and the School of Music), College of Engineering (including the School of Architecture and Landscape Architecture and the School of Mineral Industries), College of Law, College of Medicine (including the School of Nursing), College of Pharmacy, College of Veterinary Medicine.

Each of the various schools and colleges has its own bulletin which may be obtained by writing to the University Examiner, The Ohio State University, Columbus 10, Ohio.

Graduate study may be undertaken in most of the departments of the University. Such work is under the direction of the Graduate Council and the chairman of the department concerned. Students desiring to do graduate work should register in the Graduate School.

The University also conducts a Twilight School for the benefit of persons occupied during the day but desirous of continuing their education after five o'clock or on Saturday forenoon. Full college credit courses are regularly offered, and it is possible to combine day classes and Twilight School work. Many of the courses listed in this bulletin are likewise offered in the Twilight School and a few departments have developed courses for Twilight School students. For complete information, consult the office of Twilight School, 102 Administration Building.

THE QUARTER SYSTEM

The University School year is divided into four Quarters—Summer, Autumn, Winter, and Spring. Each of these Quarters comprises approximately eleven weeks. The work of the Autumn Quarter is completed before the Christmas holidays, thus eliminating interruption of studies. The Spring vacation constitutes a full week between the Winter and Spring Quarters. By attending the Summer Quarter regularly, in addition to the other three Quarters, a student may complete the usual four years of work toward a degree in only three calendar years.

The Summer Quarter (announcements for which are presented in a separate Summer Quarter Bulletin) is divided into two equal terms of approximately six weeks each for the convenience of teachers and others who cannot attend the full Quarter. A number of courses in various departments are offered which may be completed in a single term.

New students may enroll in the University at the beginning of any of the four Quarters, or either of the Summer Terms.

II. UNIVERSITY ADMISSION AND REGISTRATION

APPLICATIONS FOR ADMISSION

The admission of all students to the University is in charge of the Entrance Board. This Board determines the credits that shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants.

Applications for admission to the University will be received by the Entrance Board not later than ten days before classes begin for any Quarter. Application made after this date but before commencement of classes will be charged a late application fee of $5. No applications will be received later than the day before classes begin. Exceptions to these provisions may be made only upon the approval of the Vice President for Student Affairs. However, applications for admission to the Twilight School may be submitted as late as the day of commencement of classes. (Rule 144)

Correspondence relating to admission should be addressed to the University Examiner, The Ohio State University, Columbus 10, Ohio.

ADMISSION AS AN UNDERGRADUATE STUDENT

For admission as a regular undergraduate student, a candidate must be a graduate of a first grade High School (or equivalent preparatory school), or he must have passed equivalent entrance examinations. He must present a minimum of fifteen units, and he must meet the special requirements of the college he desires to enter subject to such deficiences (conditions) as that college may permit.

Any student who seeks to enroll for his first Quarter in this University and whose record in high school indicates that he was in the lowest third of his graduating class shall be placed on special warning when his application for admission is received and processed. He and his parents or guardian shall be so informed before final registration and the payment of fees are completed. The fact that special warning has been given shall be made known to the office of the college to which he seeks admission.

For admission as a special undergraduate student, a candidate must be of mature years and must satisfy the University Examiner and the Dean of the College that he is qualified to undertake the special program he desires.

It is essential that entering students possess a reasonable proficiency in English grammar and Composition and in mathematics including algebra. If the entering student lacks such proficiency as demonstrated by placement tests, the student must correct this weakness by registering and passing designated courses (an additional fee will be charged for each course). The number of credit hours required in these review courses will be added to the total hours required for graduation.

English— The student needing to schedule a review course must pass the course before registering for any English course. (See English 400 on page 116).

Mathematics—The student needing to schedule a review course must pass the course before registering for Physics or Chemistry or any other course in Mathematics, or within three Quarters after entering. (See Mathematics 400 and 401 on page 136).

All of the course work offered by the College is based upon the assumption that the student has a background and proficiency acquired before admission to the College which will permit him to begin the courses required by his curriculum. The student whose preparation is inadequate may be required to take courses in College which will not count toward the fulfillment of graduation requirements. On the other hand the student whose pre-college preparation

is superior may find himself eligible to receive "Em" (proficiency examination) credit counting toward graduation and may thus receive his degree in less than the normal time required for his curriculum or have more time for electives.

Additional requirements for certain college curricula and recommendations for high school preparation are found on succeeding pages.

MINIMUM SCHOLASTIC REQUIREMENTS

Any College or School of this University admitting students directly from secondary schools shall be subject to this rule. The faculties of the other Colleges and of the Graduate School of this University are empowered to establish by rule the academic standards controlling warning, probation, and dismissal of their students for deficiency in quality points.

The promulgation of these rules, and the amendment or repeal, shall be subject to the approval of the Board of Trustees.

A transfer student from another University who is admitted to advanced standing in this University shall be treated as though his entire residence had been at this University, but his point-hour ratios will be computed only upon work done at this University.

Admission to Quarters beyond the first Quarter shall be conditioned as follows:

1. To the second or third Quarter, attainment of a minimum point-hour ratio of 0.75 for the immediately preceding Quarter;

2. To the fourth, fifth or sixth Quarter, attainment of a minimum cumulative point-hour ratio of 1.70 at the end of the immediately preceding Quarter, or of a point-hour ratio of 2.00 or better, on a minimum of twelve Quarter hours, for the Quarter next preceding;

3. To the seventh Quarter, attainment of a cumulative point-hour ratio of 1.90 at the end of the sixth Quarter;

4. To the eighth or any subsequent Quarter, a minimum cumulative point-hour ratio of 2.00 at the end of one of the two consecutive and immediately preceding Quarters.

ADMISSION WITH ADVANCED STANDING—TRANSFER STUDENTS

An applicant who comes from an approved college and submits through his college registrar an official and explicit transcript describing his entrance credits, his courses of study and scholarship, and giving evidence of good standing, will be admitted to the University, provided he has maintained at least an average scholastic record. If the applicant is deficient in high school units the deficit will be made up from his college credits.

If no high school units are presented, one full year of college credits (forty-five Quarter or thirty Semester hours) will be used to satisfy the entrance requirements.

A special application blank for students who desire to enter with advanced standing will be forwarded upon request addressed to the University Examiner's office.

ADMISSION AS AN AUDITOR

An undergraduate or professional student may audit a course, without additional fee, upon approval of the professor in charge, the Head of the Department or School, and the Dean of the College.

A graduate student may audit a course, without additional fees, upon approval of an adviser, provided the instructor in charge of the course assents.

One not a student in the University may be admitted as an auditor by the University Examiner after satisfying all entrance requirements and paying the fees required.

ADMISSION AS A TRANSIENT STUDENT

A student in good standing in any recognized college or university who wishes to take work on this campus for one Quarter only and expects to return to his former college may be admitted as a transient student. His registration will terminate at the end of one Quarter. He will not be required to submit a full transcript of credits, but should request the Entrance Board to send him a Transient Student Statement. This form must be filled out by the applicant and sent to his Dean or Registrar to be signed and mailed to the Entrance Board office. The form includes a statement that he is in good standing and that he has the prerequisites to take the courses listed.

If at the end of the Quarter the transient student wishes to remain in this University, he must secure a *complete transcript of credits* from the Registrar of his former college and apply to the University Examiner for readmission.

ADMISSION AS A PROFESSIONAL STUDENT

A candidate for admission as a regular or special student in a professional program must meet the particular preprofessional requirements of the college he desires to enter, subject to such deficiences (conditions) as that college may permit.

ADMISSION OF SPECIAL STUDENTS OF MATURE YEARS

A person of mature years who is unable to meet the entrance requirements in all respects, under certain circumstances, may be permitted to matriculate for specified courses for which he can demonstrate adequate qualifications. The University Examiner is authorized to interpret the phrase "of mature years" to apply to students (except veterans) not less than 21 years old and to modify this interpretation, or apply it to other students, within the spirit of these recommendations. Inquiry concerning such admission should be addressed to the Entrance Board, and to receive consideration must reach the Board not less than ten days in advance of the opening of the Quarter. A personal interview with an applicant for admission as a special student is required.

For admission as a special undergraduate student, a candidate must be of mature years, and must satisfy the University Examiner and the Dean of the College that he is qualified to undertake the special program he desires.

PROFICIENCY AND PLACEMENT TESTS

Taking courses in college is not the only way of learning a subject. Because the Ohio State University recognizes this fact, its students may arrange early in their college residence, with the chairman of any department, to take proficiency tests covering work done (1) either by exceptionally good preparation in high school, (2) or by independent study outside of class.

Placement tests (to test the adequacy of high school preparation and place the student in the highest course which he is able to carry with a fair chance of success) are regularly scheduled during Orientation Week and at the beginning of other Quarters in Chemistry, English, Mathematics, German, French, Spanish, and Hygiene. Students may take placement tests in other departments of instruction to establish their eligibility for course work of a more advanced nature than their previous record might presume.

The student able to pass these tests may be granted "Em" (examination) credit if his work is of "A" or "B" quality. The University grants up to a total of thirty credit hours upon the basis of such examination. Thus a student may considerably reduce his requirements and may either graduate earlier or use the time saved to take more elective work.

The student should not buy textbooks until he knows the results of these tests. Indeed, because textbooks are sometimes changed from Quarter to Quarter, the student should never purchase books until he has been advised by his instructors.

The University Book Store is located in the East Basement of Derby Hall.

CREDIT FOR RESCHEDULED COURSES

Each department is authorized to administer placement examinations to students enrolling for the first time in a course offered by that department. Following such placement examinations a department may instruct the Secretary of the College in which the student is registered to change such student's enrollment to either a more elementary or a more advanced course.

If, within the first four weeks of a Quarter, a student's previous preparation is demonstrably inadequate for a course in which he originally enrolled, the department concerned is empowered to instruct the college in which that student is registered to remove the course from the student's schedule and replace it with a more suitable one.

Credit for all rescheduled courses resulting from action under this rule shall count toward the fulfillment of graduation requirements unless: (a) the student has earned credit previously for the same course at this, or some other institution of higher learning; or (b) the substituted course is one which the department, with the approval of the Council on Instruction, has established for students with inadequate preparation for college-level courses of that department.

INTER-COLLEGE TRANSFERS

Students in good standing in other colleges of the University who wish to transfer to this college should consult a counselor in the College Office before completing the transfer, and before submitting a schedule card for approval. The official transfer from one college to another is made by application to the Entrance Board.

Students who have been denied further registration in one college of the University may not be admitted to another college on this campus except by petition approved by the Executive Committee of the college they wish to enter.

A transfer to an undergraduate college of the University must be completed not later than 10 days before the first day of classes of the Quarter the transfer becomes effective.

REGULATIONS CONCERNING VETERANS

The United States Veterans Administration has approved the Ohio State University as an institution for training under Public Laws 16 and 894 (Vocational Rehabilitation Act), Public Law 346 (Servicemen's Readjustment Act of 1944), and Public Law 550 (Veterans' Readjustment Assistance Act of 1952). The University, accordingly, encourages the enrollment of demobilized students and offers its facilities to those qualified for attendance to the full extent of its accommodations in each of its colleges and schools. The rules for admission and continued registration for demobilized students are, in general, the same as those for other students. The regional office of the Veterans Administration located in Cincinnati, Ohio, has charge of training in Columbus. Veterans desiring information relative to their eligibility under laws relating to veterans should contact the Regional Office of the Veterans Administration in Cincinnati, Ohio, or the Contact Office, 48 Starling Street, Columbus, Ohio.

Those veterans eligible to continue training under the provisions of Public Law 346 during the year 1957-1958 should inquire for instructions before registration at the Veterans' Center, Administration Building.

Each veteran who desires to attend Ohio State University under Public

Law 550 should apply to the Veterans Administration for a Certificate of Education and Training. At the same time he should proceed with his registration in the University in the same manner as any regular student. After the veteran's registration in the University has been completed and his fees have been paid he should bring his PAID fee card, schedule card, and Veterans Administration Certificate for Education and Training to the Veterans' Center, lobby of the Administration Building. Instructions will be given there concerning the required monthly certificates to the Veterans Administration.

Particular attention is called to the following statements from the Veterans Administration Regional Office. "The Veterans' Readjustment Assistance Act of 1952, Public Law 550, 82nd Congress, provides that a veteran must actually commence an active pursuit of an approved program of training prior to August 20, 1954, or within three years of his discharge date, whichever is the later date. He must be in actual pursuit of his program on this delimiting date, except where his attendance is interrupted for normal summer vacations or for other reasons deemed by the Veterans Administration to be beyond his control; and except that he may suspend pursuit of his program for a period or periods of not more than twelve consecutive months in length. This law also provides that no education or training shall be afforded a veteran beyond a date eight years following the end of his basic service period.

"An eligible veteran may make only one change of program during his entire period of entitlement to benefits. Prior to this delimiting date, he may make this change without restriction, provided his conduct and progress were satisfactory in his previous program and provided he first submits a VA Form 7-1995. After his delimiting date, the change may be made only if it is a normal progression from the course previously pursued or if the veteran is not making satisfactory progress in his program. VA Form 7-1995 must be submitted prior to changing a program to establish a date of claim for benefits in connection with the new program. If a veteran showed a Ph.D. goal on his application and described the program he planned to take to attain that goal as a Bachelor's degree, Master's degree and a Ph.D., the advancement from one degree to the other does not constitute a change of program."

LIMITATION OF ENROLLMENT

The Ohio State University Board of Trustees has adopted a policy of giving preference in admission to Ohio residents, particularly veterans. However, non-resident high school graduates who rank in the upper one-third of their classes and advanced students with records averaging above "C" will be considered for admission. These well-qualified nonresident students will be accepted in numbers consistent with the facilities of the University.

REGISTRATION PROCEDURE

Schedule cards for registration are distributed from the Registrar's Office on the second floor of the Administration Building. Under the Quarter plan the student formally schedules his program of studies for only one Quarter at a time, although he may informally plan several years ahead with his adviser.

Students who are in residence in any undergraduate college of the University during the Spring or Summer Quarter must present their study programs for the Autumn Quarter before September 1. Such students who are in residence during the Autumn or Winter Quarter are required to present their study programs for the following Quarter at dates announced during these Quarters. Failure to comply with this rule will result in the assessment of a fee of $1 for each day of delay, the maximum being $5. (Rule 164). Students not in residence may register either by mail or in person.

Changes in approved scheduled in undergraduate colleges will be made upon approval of the College Office; provided, that a student may add a course

to his schedule after the first Saturday noon after classes begin only with the permission of the instructor, the chairman of the department, and the dean of the student's college.

Changes in time of class meetings on Schedule Cards approved by the Registrar may be made only with the consent of the department in which the course is offered. The Registrar does not make changes in time after the schedule is approved.

PAYMENT OF FEES

Fees may be paid as soon as fee cards have been received by the student from the Registrar. Students are required to pay their fees each Quarter before the day designated in the University Calendar for classes to begin. Any student who fails to meet this requirement will be assessed a penalty of $1 for each succeeding day or fraction thereof unless excused by the office of the Registrar. The maximum penalty for late registration and payment of fees shall be: in the Twilight School, $5; elsewhere, $10. Students should report promptly to their classes on the first day that classes are scheduled. Students who have registered sufficiently early usually receive fee cards approximately three weeks prior to the opening of the Quarter. It is to the advantage of all students to register as early as possible.

The second Saturday noon of each Quarter shall be the final deadline for fee payments. Extensions to this deadline shall be given only in extreme emergency and then only upon the approval of the Vice President in charge of student affairs.

All Quarterly bills, fees, and laboratory deposits required from students must be paid at the Bursar's Office previous to and as a condition of registration for that Quarter. (Rule 160)

On the first day of classes each Quarter each student will be required to demonstrate his right to enrollment in his scheduled classes by presentation of a schedule card and paid fee card, unless the instructor has in his possession at the time a roll card for that student. (Rule 160)

ORIENTATION PROGRAM

Orientation Programs are planned for each of the four Quarters of the school year. In January, March, and June of each year, one-day Orientation programs are held on the Mondays preceding the opening of classes on Tuesdays for these three Quarters. In September a more comprehensive program called Orientation Week occupies the week preceding the opening of classes.

ORIENTATION WEEK ATTENDANCE IS REQUIRED

All new Freshmen in the undergraduate colleges and schools (and new students in the Dental Hygiene and Dental Laboratory Technology curricula) the expected to take part in the full Orientation Program. Autumn Quarter freshmen report on Monday, Tuesday and Wednesday starting days for Orientation Week projects, according to group schedules mailed to them early in September.

Autumn Quarter transfer students have a shorter program of required Orientation projects beginning at 8:00 A.M. on Friday of Orientation Week.

New transfer students awarded 90 hours or more of credit, must provide the Health History Form and Physician's Health Certificate (from home town doctor) which replace the campus physical examination.

New students in the Graduate School and the Professional Schools, those in undergraduate colleges who have already earned four-year degrees elsewhere, and new transient students have only two University orientation obligations, the campus Chest X-ray, and the Health History Form and Physician's Health Certificate (from home town doctor) which replace the campus physical examiantion.

Twilight School students are excused from the Orientation Programs.

Ordinarily, excuses from required entrance projects of the Orientation Week Program are not granted, and employed students are expected to make plans to take part in projects when the Orientation Program starts. Printed instructions will be mailed two weeks before the Quarter begins. All new students are expected to follow the instructions in this program in every detail. Tests are essential to assure places in classes and registration will not be considered complete until all *required entrance projects* have been finished.

Inquiries about these Orientation Programs should be addressed to Director, Orientation Program Office, University Hall, East Basement Entrance (campus telephone 104).

Two-day summer orientation conferences are also offered to new Freshmen. They are optional and conducted by the University Counseling and Testing Center. Freshman Camps are offered on the week-end before Orientation Week. They are operated by the University YMCA-YWCA, and several church foundations. Freshman orientation courses and advisory services are provided by the five undergraduate colleges as additional parts of the University's orientation program.

PHYSICAL EXAMINATION FOR NEW STUDENTS

A thorough physical examination is required of all undergraduate students when they enter the University. Physical conditions representing deviations from the normal are noted and students are given follow-up service and counseling. Individual programs are arranged in order that students with disabilities are placed in situations which will enable them to benefit most from their University experiences.

Because appointments with the Department of Physical Education must accommodate a large number of students within a limited time, a penalty of $1 will be assessed either for failure to keep an appointment or for a change in the assigned date of the physical examination.

REQUIRED COURSES

Each college has certain requirements which must be met by every student seeking to earn a degree in that college. The specific course requirements will be found, for each of the curricula administered by this College in succeeding pages of this Bulletin. In addition to these, the University has established certain requirements outlined below.

REQUIRED COURSES FOR MEN STUDENTS

All men students, entering any of the undergraduate colleges of the University are required to schedule: 1) two hours of Military or Air Science, or three hours of Naval Science, every Quarter they are in residence until a total of twelve (Naval Science, eighteen) credit hours has been earned. 2) one hour of Physical Education every Quarter until a total of three credit hours has been earned. 3) one hour of Hygiene during one of the first three Quarters of residence, and if necessary each Quarter thereafter until one credit hour has been earned.

REQUIRED COURSES FOR WOMEN STUDENTS

All women students entering any of the undergraduate colleges are required to schedule: 1) one hour of Physical Education every Quarter they are in residence until a total of six credit hours has been earned. 2) one hour of Hygiene during one of the first three Quarters of residence, and, if necessary, each Quarter thereafter until one credit hour has been earned.

EXCUSES FROM REQUIRED COURSES

The College in which a student is enrolled may excuse a student from course requirements imposed by that College.

The requirements of Physical Education, Hygiene, and Military Science, are University requirements. The President and the departments of instruction directly concerned may grant by Faculty Regulation excuses from these courses. Excuse from Military or Air Science is granted generally to men who are: 1) over twenty-three years of age; 2) not physically fit for ROTC; 3) veterans with equivalent military training; 4) aliens; 5) transfer students who enter the University with 90, or more, hours of credit.

GRADUATE CREDIT FOR UNDERGRADUATES

An undergraduate student who has competed three years of course work and whose full time is not required for the completion of course work for his baccalaureat degree, may select certain courses for graduate credit provided his cumulative point-hour ratio is 2.7 or above. He must obtain permission from the instructor in charge of the course, from the Secretary of his College, and from the Office of the Graduate School before registering for the courses and he must achieve a grade of "B" or better in such courses in order to obtain graduate credit. A student who meets these requirements and petitions for graduate credit cannot use these courses for graduate credit until he is admitted to the Graduate School, and until the department in which he wishes to specialize accepts the work as graduate credit. Not more than fifteen Quarter hours of such work may be counted toward an advanced degree.

REGISTRATION OF STUDENT AUTOMOBILES

In the interest of safety and orderly traffic on the Ohio State University campus, certain regulations have been set up by the Board of Trustees.

All motor-driven vehicles driven by students, regardless of ownership, *must be registered* on their schedule cards in the provided space. Registration should be made at the time the student enrolls for University work each Quarter, or at the time he secures access to the car. Whether driven frequently or on infrequent occasions, car registration is required. Failure to register is subject to a $10 fine. A full statement of parking and traffic regulations is available at the Traffic Department in the Service Building.

Credits will be withheld at the end of the Quarter for unpaid fines or unanswered notification.

Students are prohibited from parking on campus except in places designated for student parking.

WITHDRAWAL PROCEDURE

WITHDRAWAL FROM A COURSE

(1) *During the first four weeks of each Quarter* (*interpreted as 28 days* starting with the first day of classes, normally a Tuesday) a student has the privilege within educationally sound limits of withdrawal from a course. The withdrawal procedure must be completed within the 28-day period. This requires the student to obtain a drop ticket in his College Office, and to submit it to the Registrar's Office for schedule change. The instructor's permission is never required, nor is a report of class standing requested.

(2) *After expiration of the 28-day period* withdrawals are permitted only by petition. The Dean's Office or Petitions Committee will consider requests for withdrawal from courses *only in emergency circumstances beyond the student's control,* such as the student's hospitalization. As required by

Faculty Rule 135, the Committee will not act until it has considered the instructor's report upon the student's standing in the course and other relevant information. The "*permission*" of the instructor is neither required nor requested.

COMPULSORY COURSE WITHDRAWAL

An enrollee of any undergraduate college who fails to attend a scheduled course before Saturday noon of the first week of classes, may, at the option of the department, be disenrolled immediately from such course. In the event a department chooses to take such action, it will be the responsibility of the department chairman to notify the student's college office. A change ticket removing the course from the student's schedule shall be prepared in the college office and a copy shall be forwarded to the Office of the Registrar. (Rule 168)

WITHDRAWAL FROM THE UNIVERSITY

A student who desires to withdraw from the University must apply to the Dean of his College for permission to withdraw. If the student leaves the University at any time during the Quarter without communicating with the Dean of his College, he will be marked as having failed in all his courses for the Quarter.

No student may withdraw from the University within two weeks of the beginning of final examinations unless the reports of his instructors show that his record to date is satisfactory.

When a student withdraws from the University during a Quarter his parent or guardian shall be notified of the fact by the Secretary of the College. (Rule 175).

III. FEES AND EXPENSES

Registration is not complete until all fees have been paid. No student will have any privileges in the classes or laboratories until all fees and deposits are paid, except under special procedure authorized by the President.

Since all fees are due and payable as a part of the student's registration, before the day designated in the University Calendar for classes to begin, no person should come to the University for registration without money sufficient to cover all of his fees and deposits.

A penalty of $1 for each succeeding day or fraction thereof (with a maximum of $10) will be assessed for failure to comply with this rule unless excused by the Registrar.

1. Matriculation fee (nonreturnable)
   Required of every student on first admission to the University ..... $ 15.00
2. University fee
   Quarter fee for a resident of Ohio..... 75.00
   Quarter fee, including nonresident fee, for a nonresident of Ohio 200.00
3. Special University fees
   (a) Laboratory deposit
   All laboratory supplies are sold to students at the Laboratory Supply Store, McPherson Chemical Laboratory and charged against the deposits. Instructors shall not permit a student to engage in laboratory work unless the student has shown a receipt from the Bursar for the deposit required in the course.
   (b) Deposit for military uniform for Freshmen..... 28.00

Note: When checks given for payment of fees are not paid on presentation at bank, registration will be automatically cancelled and receipts given considered null and void.

RULES GOVERNING NONRESIDENT STATUS

1. **Rule as to nonresident fees.** Every student who is not a legal resident, as defined below, of the State of Ohio, is required to pay a nonresident fee in addition to other University fees.
2. **Registration.** The burden of registering under proper residence is placed upon the student. If there is any possible question as to legal residence, the matter should be brought to the attention of the Registrar, and passed upon prior to original enrollment.

POLICIES IN AID OF RESIDENCE DETERMINATION

IN GENERAL

The status of a student as a resident or a nonresident of the State of Ohio will be determined as of his original enrollment at The Ohio State University. In general, that status will remain the same throughout his attendance at the University. In those cases where there has been a break in a student's attendance at the University, the beginning of the last enrollment may be considered by the Registrar as the student's "original enrollment" for the purposes of residence determination. If it is so considered and if the student gained or lost an Ohio residence during the period that he was absent from the University, his classification will be changed accordingly.

The policies followed in determining the legal residence of students registering at The Ohio State University are the same policies which determine legal domicile. Two conditions must be present: first, it is necessary that the adult student or the parents of a minor student have been in the state a minimum period of one year prior to the original enrollment; and second, that there is an evident present intent to remain in the state indefinitely. Both the physical presence and the intent to remain indefinitely must exist during the entire one-year period in order to be exempt from the nonresident fees.

The serious problem in residence determination necessarily turns on the existence of the intention of the adult student or of the parents of a minor student. In general, it is assumed that the intent to remain indefinitely in the state of Ohio is evidenced not only by what the person states but what the person has actually done. Normally, persons who wish to establish domicile shall do all those things a person does in making a place a permanent residence, such as obtaining full-time employment, transferring or establishing church membership, affiliation with local organizations, voting, the filing of federal, state or other tax returns, the execution of a will or other legal documents as a resident, establishing a home, buying property, and the various other things which give evidence of intent to remain indefinitely within the state.

SPECIFIC APPLICATIONS

With these general policies as background, the following situations are discussed as specific applications of the general policies to aid the student in a self-determination of his status:

1. **Minors.** The domicile of a minor student shall be considered the same as that of his natural or legal guardian (if any) at the time of his original enrollment, regardless of emancipation. However, students who are under the age of 21 but who have been married or who served in the armed forces on active duty will have their domicile determined under the section below dealing with Adult Students. An application for resident status will be considered in the event that:
   a. the natural guardian of an unmarried minor student gains an Ohio domicile after the student's original enrollment; or
   b. an Ohio resident is appointed legal guardian of a nonresident minor student upon the decease or disqualification of the natural guardian and after the student's original enrollment.

In no event will it be granted prior to one year after the change of domicile or appointment, whichever is applicable.

In any case where it is determined that the parents of a minor have acquired an Ohio residence or that an Ohio guardian was appointed in order to claim residence status for the student, the student's classification as a nonresident will be continued. In case a minor child, whose legal domicile is in some state other than Ohio, has been living with relatives or another person in Ohio who is supporting the minor child, such support must have been given for a minimum of one year prior to the original enrollment in order that the domicile of the minor child shall be considered Ohio. Furthermore, this relationship shall be maintained in a bonafide home, the support having been full support and such as to qualify the child as a dependent for federal income tax purposes. In case a young man or young woman enters service before reaching 21 years of age and while the family is domiciled in Ohio, and the family moves from Ohio before the young man or young woman is discharged from service, the young man or young woman may return to Ohio as a resident unless he follows the family to the new home.

The effect of employment while in attendance at the University is discussed below.

2. **Adult Students.** An adult student will be considered as legally domiciled in Ohio if he has been in the state a minimum of one year prior to his original enrollment with the requisite intention to remain indefinitely. If the student claims he has obtained a domicile in Ohio after his original enrollment in the University, the following policies are applicable:

Persons do not normally establish domicile when it seems evident by what they have done that their main purpose in coming to Ohio was to go to school. If it can be clearly established that the person came to Ohio for purposes other than attending school, and that the person has been in Ohio twelve consecutive months doing all those things which one normally does in making a place a permanent residence *and that attendance in school is incidental to other activities*, that person may establish domicile in Ohio. There is a strong presumption that one who comes into the state to attend college has a temporary residence and not a domicile. Therefore, the student bears the burden of proving that the attendance at school is *incidental to his other activities.*

The exercise of the privilege of voting does not conclusively establish the fact of domicile, but is to be considered along with other facts bearing upon domicile.

a. MARRIED MEN

The fact that a young man is married, may have established a home and bought real property in the State of Ohio may give support to the claim that there is an intent to remain in Ohio. This in itself, however, is not conclusive proof of domicile, because these activities are also necessary to support his family. Unless the student can show that his main purpose is to make this his permanent residence in Ohio at the time of his marriage and that going to school is incidental to that main purpose, he will be classified as a nonresident.

b. MARRIED WOMEN

The legal domicile of wives normally follows that of their husbands. For the purpose of the payment of fees a married woman will be classified as a resident or a nonresident depending on how her husband would be classified if he were applying for admission. A married woman living apart from her husband can establish a domicile under the same conditions as she could if she were single.

In the event that a young woman, a resident of Ohio, marries a nonresident person and wishes to continue in the University, her resident status may be continued provided her enrollment is continuous.

c. EMPLOYED STUDENTS

Employment while attending school on a full-time basis will not indicate an intent to remain in Ohio indefinitely and thus change a nonresident's domicile to Ohio. Such activity is equivocal; without further evidence, it shows only that the student must work in order to effectuate his main purpose in coming to Ohio—that of attending school. An employed student attending school on a part-time basis should consult the Registrar for a determination of his status.

Nonresident persons who obtain full-time employment and attend Twilight School only for twelve consecutive months may establish domicile if the other factors of domicile are present.

3. **Service Men or Women and Veterans.** Normally, one does not establish domicile while in service, nor by being in a state under compulsion. Therefore, a service man or woman normally remains domiciled in the state where he or she was domiciled when he or she entered service, unless he or she has taken affirmative action to acquire new domicile. If a nonresident veteran enters school within the twelve-month period

immediately following discharge, it shall be considered that that person has not yet established domicile within the state. Subsequently this person does not establish domicile by going to school nor while going to school even though he has married and may be establishing a home. See policies outlined above.

4. Aliens. Aliens who come to the United States are subject to the applicable rules set out above, with this exception: Aliens who come into the United States on non-immigrant visas, especially student visas, for the obvious purpose of attending school, shall be subject to the non-resident fee. Alien parents of a minor child may establish legal domicile in Ohio before citizenship is granted. In order to establish such domicile, the family must have been in Ohio at least the minimum period of twelve consecutive months prior to the original enrollment and must have done those things which a family normally does in making a place a permanent residence, including the intention of remaining in Ohio indefinitely. Such minor students may also claim residence status as in paragraph 1 above. It is assumed that if the family has been in Ohio long enough to take out citizenship papers, this shall have been done.

SPECIAL FEES—PENALTIES

PENALTY FOR FAILURE TO KEEP APPOINTMENT FOR PHYSICAL EXAMINATION

A penalty of $1 will be assessed for failure to keep appointment for Physical Examination or for change in date of Physical Examination.

FEE FOR LATE FILING OF SCHEDULE CARDS

A student who fails to file his schedule card within the required time must pay a penalty of $1 for each day of delay, the maximum fine being $5.

FEE FOR CHANGES IN APPROVED SCHEDULE CARDS

Changes in subjects on approved schedule cards will be made only upon the approval of the student's College office and the payment of $1 for each change involved unless such payment is waived by the College office approving the change.

RETURN OF FEES ON WITHDRAWAL

Regular fees are in part returnable in case a student withdraws on account of sickness or for other causes beyond his control, if such withdrawal is made within a period of 29 days in which classes are scheduled after the beginning of the Quarter. Students withdrawing at the request of the University are not entitled to any refund of fees. *The matriculation fee is not considered a part of the regular fees and, therefore, is not returnable.*

Fees will normally be refunded according to the following schedule:

First 5 days during which classes are scheduled.....Full fees less $10
Next 12 days during which classes are scheduled.....75% of fees paid
Next 12 days during which classes are scheduled.....50% of fees paid
After 29 days during which classes are scheduled.....No refund

Permission to withdraw given in writing by the Dean of the College must be presented to the Bursar within the period listed to be eligible for the listed refund.

If exceptionable conditions prevent presentation of withdrawals at the Bursar's Office at the proper time and the student has not been able to attend classes during this time, the case should be referred to the President for his judgment.

No fees will be returned in case of withdrawal of students until thirty days have elapsed from the date of withdrawal.

If fees are paid under mistake of law or fact they are returnable in full. Fees are not returnable except as provided in this rule.

Laboratory Deposits. If a student is forced to withdraw from a laboratory course during a Quarter, he must first secure permission from his Dean.

An order for refund for the unexpended portion of the deposit may be obtained by applying at the Laboratory Supply Store, McPherson Chemical Laboratory. The unexpended part of the deposit will be paid at the Bursar's Office on presentation of the order for refund.

COST OF A YEAR'S WORK

The total cost of a year's work—three Quarters, will depend considerably upon the course pursued. In some courses considerable material is used by the student and this must be paid for by him. The cost of books is an item which varies with the course.

In order to furnish information, there is listed below an estimate of the average payments required by the University for the Freshman year and the estimated cost for room and board at a safe price. Living costs are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid at the beginning of each Quarter.

ESTIMATE OF EXPENSES FOR THE FRESHMAN YEAR

Matriculation Fee (nonreturnable)	$ 15.00
University Fee	225.00
Deposits to cover laboratory materials and breakage	50.00
Deposit to cover military uniform	28.00
Books	75.00
The Agricultural Student—payable annually	2.00
Room Rent and Board—Men (Private Homes and Restaurants)	875.00
Room and Board in Dormitories—Men	795.00
Room and Board—Women ($265 a Quarter)	795.00
Total (Men in Private Homes)	$1270.00
(Men in Dormitories)	$1190.00
(Women)	$1162.00

In order to meet the necessary expenses of registration, books, required deposits, and one Quarter's payment for room and board, the beginning out-of-town student should come prepared to spend $250 to $300 during the first ten days of a Quarter—$125 more if he is not a resident of Ohio.

STUDENT PERSONAL EXPENSE FUNDS

The incoming student will save himself much time and trouble by taking a few simple precautions in regard to his personal expense money. The student should bring enough cash to cover expenses for several days. If he does not wish to carry cash, he should use travelers checks, as they are readily cashed. If he does bring a check, it should be in the form of a bank draft or cashier's check. The student who has a check should not wait until he has spent all his money before cashing the check for it may take several days to collect it. Be sure that any checks that are for the payment of fees are drawn for the exact amount of the fees.

The following facts concerning the cashing of checks should be borne in mind by parents and prospective students.

(a) The Ohio State University does not cash checks.

(b) Checks for fees will be accepted by the University, but only when the check is drawn for the exact amount of the fees.

(c) Banks do not cash checks for strangers unless the check is endorsed by a customer of the bank or some person of known responsibility. This rule applies to cashier's checks, bank drafts, and certified checks.

The student who intends to use a checking account will find that an account in Columbus will be of more value than an account at home or in some other city. An account with a Columbus bank will provide a safe place for depositing funds, will help create a local credit standing, will furnish a means of depositing and cashing checks, and will help the student to understand banking practices.

LIVING ARRANGEMENTS

The President of the University has the authority to supervise living arrangements of students not residents of the city of Columbus and to order the immediate withdrawal of any student from any boarding or lodging house in which the surroundings are undesirable.

MEN'S HOUSING

Baker Hall, a residence for men, houses approximately 750 men on a board and room basis in single, double and triple rooms.

The Stadium Dormitories offer 680 men low-cost board and room.

The River Road Dormitories provide housing facilities (double and single rooms) for an additional 400 men. One building of these dormitories has been designated as a graduate building for graduate students only. Cafeteria service is available at reasonable rates.

Contracts for board and room are for the academic year at Baker Hall and the Stadium Dormitories.

Some of the above mentioned facilities offer housing during the Summer Quarter as well as the academic year.

Applications for either of the above accommodations may be made through the business offices of either dormitory, the Director of Men's Housing, Room 112, Administration Building.

Furnished rooms in private homes in the city of Columbus provide housing for a greater part of the men students. The rates vary from $30 to $35 a month for single rooms; $25 to $30 for double rooms (per student). One should visit Columbus three to four weeks prior to entering the University to choose a suitable room. A listing of available rooms will be found in Room 112, Administration Building.

BOARD

Board for students is available at a Quarterly rate at Pomerene Refectory. Cafeteria service is also available at Pomerene Refectory and Ohio Union.

THE GEORGE WELLS KNIGHT INTERNATIONAL HOUSE

The George Wells Knight International House, 104 East Fifteenth Avenue, offers desirable living quarters to a limited number of foreign and American students. Applications should be made to the Director of Men's Housing, Room 112, Administration Building.

MEN'S FRATERNITIES

A large number of men enjoy the advantages of living together in fraternity houses. These Greek letter organizations have for many years maintained establishments which provide excellent rooming and boarding arrangements. They meet the same standards of inspection that are required of the

approved houses and are considered as an integral part of the University's housing arrangements. Prospective students who are interested in possible membership should write to the Dean of Men.

WOMEN'S HOUSING

Every woman student, whether undergraduate or graduate, must register with the Dean of Women at her office in Pomerene Hall during the first week of each Quarter.

All living arrangements for women are under the supervision of the Dean of Women. Women students should apply to the Dean of Women for housing accommodations when making application for admission to the University. Under the rules of the faculty, freshman women who are residents of Ohio so far as possible will be placed by the Dean of Women in the University Residence Halls. Freshmen who are admitted after the University Residence Halls are filled are then placed in University Houses or other smaller units of housing.

Freshmen and other students who desire to work for room and board in private homes may make such arrangements, and those who desire to live with relatives in Columbus will be given permission to do so.

After September 10, 1957, housing cannot be arranged for the Autumn Quarter by correspondence. Students or their parents must consult the Dean of Women or her assistant in person for housing accommodations.

FOR FURTHER DETAILED INFORMATION

Booklets and other sources of information about the various kinds of living quarters will be gladly and promptly sent to any one who inquires. Such information will include detailed descriptions of the halls of residence and houses as well as prices for the various types of accommodation. Address requests for booklets to the Dean of Women, Pomerene Hall, The Ohio State University, Columbus 10, Ohio.

MARRIED STUDENTS

Housing for married students constitutes one of the University's most difficult problems. While 350 married veterans will be housed in the family units in the River Road Project, the greater number of married couples must find living quarters in the city of Columbus. Listings of houses and apartments available for rent are posted in the Director of Men's Housing Office, 112 Administration Building.

IV. SCHOLARSHIP STANDARDS

STUDENT RESPONSIBILITY

The student is responsible for knowing his own standing scholastically in reference to the published regulations and standards of the University and of his college.

Copies of the "University Rules and Regulations for Students" are available at the Registrar's office. Each student should be familiar with the contents of this booklet.

THE MARKING SYSTEM AND POINT SYSTEM

The grade marks given in all Colleges of the University are as follows:

A— Excellent; for each credit hour, 4 credit points shall be allowed.

B— Good; for each credit hour, 3 credit points shall be allowed.

C— Average; for each credit hour, 2 credit points shall be allowed.

D— Poor; for each credit hour, 1 credit point shall be allowed.

E— Failed; for each credit hour, 0 credit points shall be allowed. Credit for a course in which "E" has been received can be obtained only by repeating and passing the work in class.

F— Failed absent, same conditions as E, above. This mark indicates that the student was absent from the final examination without excuse, and that his work during the Quarter does not justify the expectation that he will secure a passing grade.

I— (Incomplete)—indicate (1) that the work of the student in the course is qualitatively satisfactory, but that for legitimate reasons a small fraction of work remains to be completed; or (2) that the record of the student in the course justifies the expectation that he will obtain a passing grade, but he has been unavoidably absent from the final examination. (Athletic eligibility is governed by Intercollegiate Conference Rules which do not permit participants in intercollegate contests to have any incomplete marks against them.) The student is charged with the responsbility of completing the work at the earliest possible time, and not later than the end of the Quarter in residence following receipt of the Incomplete; except in laboratory courses offered but once a year, he shall have one calendar year in which to complete the work. If, at the close of the Quarter, the student has not completed the work remaining to be done, he will be given a final Quarter grade for the work which shall take into consideration the unfinished part of his requirement.

In no case shall a student who has received the mark "Incomplete" be permitted to repeat the course in which such mark was received until such time as the Incomplete has been removed in the manner hereinbefore provided, and then only in such cases as fall within Faculty Rule 133.

P— (Progress)—indicates satisfactory progress in courses that are individual in character or extend over more than one Quarter.

R— Final mark will be reported at end of sequence.

S— Satisfactory. (For graduate students only.)

T— Temporarily excused. (This applies only to Military or Air Science, Physical Education or Hygiene.)

U— Audit.

X— Permanently excused. (This applies only to Military or Air Science, Physical Education, or Hygiene.)

Em— Credit allowed for work of "A" or "B" quality as tested by examination, but not done in class (or in residence); no credit points given but hours toward graduation counted; hours not counted in computing point-hour ratio; a maximum of 30 hours of "Em" credit allowed.

K— Credit allowed by the University Examiner for work of "C" grade or better done at another institution; no credit points given, but hours toward graduation counted; hours not counted in computing point-hour ratio.

REMOVAL OF FAILURE IN REQUIRED COURSE

The student is responsible for repeating in class, at his first opportunity, a required course in which he has failed, unless the Executive Committee of the College authorizes a substitute course.

REPETITION OF COURSES

An undergraduate or professional student who has received a grade of "D" or "E" in a course, either at this University or elsewhere, may repeat the course for credit upon the recommendation of the Executive Committee and with the approval of the Dean of his college. A graduate student may, when approval is given by an adviser, repeat for credit any course in which he has received a grade "D" or "E." The credit hours for a repeated course shall in no case be counted more than once in meeting graduation requirements.

A student who has received a grade of "A", "B", or "C" in a course taken at this University or elsewhere may repeat the course only as an auditor, upon receipt of permission by the Dean of his college.

A student who has audited a course may subsequently repeat the course for credit with the permission of the Executive Committee of his college.

NOTIFICATION OF GRADES

At the close of each Quarter the Registrar notifies each student by mail of the grades earned during the Quarter. These grades become a part of the official record of the student and are not subject to change except upon official authorization of the chairman of the department or director of the school and the Dean of the college.

A grade filed in the Office of the Registrar is a part of the official records of the University. It is not subject to change except upon written authorization of the Departmental Chairman or Director of the School and of the Dean of the College, and only when a clerical error has been discovered.

THE POINT HOUR RATIO

A student's academic standing for a Quarter is expressed by his "point-hour ratio." This ratio is determined by dividing the total number of points earned by the total number of credit hours scheduled or undertaken. Courses graded I or P are not included in the computations. The following is an example: A = 4, B = 3, C = 2, D = 1, E = 0, F = 0

	Hours	*Grade*	*Points*
Course No. 1.....	5	A	20
Course No. 2.....	3	C	6
Course No. 3.....	(3)	I	
Course No. 4.....	3	E	0
Course No. 5.....	3	B	9
	14		35

Point hour ratio 2.50

When the final grade on Course No. 3 is recorded the points and hours will be included in figuring the student's point-hour ratio. When a student has a record for two or more Quarters he will have a cumulative point-hour ratio determined by dividing the total points earned by the total hours undertaken.

WARNING AND PROBATION

Any student subject to the provisions of the preceding rule who fails to achieve a point-hour ratio of 2.00 on the work of any Quarter shall be warned and his parents or guardian notified by the University Registrar on behalf of the Dean of his college.

Any student subject to the provisions of the preceding rule whose cumulative point-hour ratio is below 1.70 at the end of the third, fourth, or fifth Quarter, or below 2.00 at the end of the sixth or any subsequent Quarter shall be placed on probation. Such probation shall continue until the required cumulative point-hour ratio has been achieved or the student has been dismissed pursuant to the rules regarding dismissal. Other conditions of probation may be established by the Administrative Council. The student and his parents or guardian shall be notified of probationary status by the College in which he is registered. Such notifications shall include a clear statement of what shall be required of the student academically if he is to avoid dismissal.

DISMISSAL

A. Failure to meet the minimum scholastic requirements shall result in dismissal from the University as of the end of the Quarter in which such failure occurs; provided that where it is mathematically impossible for a student to regain a 2.00 cumulative point-hour ratio in the Quarter following, dismissal shall be effective immediately.

B. If at any time the preparation, progress or success of a student in his assigned work is determined to be unsatisfactory, the Executive Committee of the College in which he is registered shall be empowered to dismiss him from the University.

C. Notice of dismissal from the University shall be sent by the Dean of the College in which the dismissed student is registered, both to the student and to his parents or guardian.

D. A dismissal for failure to meet the minimum scholastic requirements may be waived for educationally sound reasons through special action of the Executive Committee of the College in which the student is registered.

E. Any student who may be reinstated by the Executive Committee of his College following dismissal shall be subjected to such special requirements as may be *determined appropriate* by the Executive Committee. If the performance records of any reinstated student do not meet the conditions specified at the time of reinstatement, then the Executive Committee shall consider all the facts in the student's case and determine whether dismissal by special action is in order or a waiver for another Quarter is indicated.

NOTE: The rules governing admission to and dismissal from the University as stated in this Bulletin shall become effective with those students whose first enrollment in this University occurs *in* or *after* the Summer Quarter 1957. The rules as stated in previous bulletins shall remain effective for all students originally entering or transferring to this University in any Quarter *preceding* the Summer Quarter of 1957; provided, that *after the Spring Quarter 1959*, all students shall be subject to the present rules.

V. STUDENT PERSONNEL SERVICES

The University and the community together provide a wide range of opportunities for learning experiences outside the classrooms. Extracurricular activities of all kinds, social affairs, student churches, student government, dormitory and fraternity life, and varsity and intramural athletic programs are potential laboratories for the development of many kinds of important living skills and appreciations.

There is an annual lecture series plus a number of concerts and plays in which students may participate. There are special advantages in the University's location in a metropolitan community in that many cultural opportunities are offered in the downtown theatre, concert, and lecture halls.

In student government agencies, Student Senate, Student Court, and elective offices and in the Colleges' Student Councils, some aspects of "training in citizenship" find expression.

Student activities which are centered in Pomerene Hall and the new Ohio Union Building along with those sponsored by the University administrative and personnel officers are ample evidence of the University's expectations that learning experience shall extend throughout the campus.

UNIVERSITY HEALTH SERVICE

The University Health Service is located in the Student Service Building. It is maintained on the campus to serve the health needs of the student body under the leadership of a Director, and a medical staff of attending physicians, specialists, nurses and technicians.

The objects of the University Health Service are:

(1) To protect, maintain, and improve the health of students; cooperation in and follow up of entrance examination; early diagnosis and control of all communcable conditions, in cooperation with other health agencies; individual health guidance, through personal conferences; first aid and casual treatment of students on the campus; health examination for certain groups and cases; consultant specialist service for certain cases; full cooperation with family physician, other physicians, and health agencies; centralized correlation of health agencies on the campus to best educational personnel ends; maintained emphasis on individual and group preventive medicine, and individual health education in connection with other services rendered.

(2) To serve as the primary coordinating agency through centralized health records with University Personnel officials in individual student health appraisal and health problems which involve the initiation, maintenance, discontinuance, or improvement of students' university relationships.

(3) To participate in student hospitalization in the sense of cooperating in the administration of The Ohio State Student Hospital and Surgical Insurance Plan, or other student subsidized hospital or health insurance plans.

(4) These benefits are open to change at anytime without formal publication.

(5) Research as related to student health problems and needs.

RELIGIOUS ACTIVITIES

At The Ohio State University religious activities and services are provided by the volunteer student religious groups and local churches described in the bulletin *Religious Activities at Ohio State University.*

The University maintains a Religious Affairs Center on the second floor of the Student Services Building and provides counseling and program advisory services through the offices of the Coordinator of Religious Affairs located in this Center, Room 206, Telephone AX-9-3148, Ext. 601.

The Young Men's Christian Association and the Young Women's Christian Association, located in the Religious Affairs Center, provide on-campus programs open to all students (telephones: YMCA, Ext. 794; YWCA, Ext. 797).

STUDENT FINANCIAL AIDS

Administration of student scholarships, student loans, and student employment is handled in the Student Financial Aids Office, Student Services Building. Service rendered in the office is free and available to all persons enrolled in The Ohio State University. Wives of students and those immediately dependent upon them for support may avail themselves of the employment resources. FINANCIAL AIDS COUNSELING IS A SPECIAL SERVICE OF THE OFFICE.

For further information consult the pamphlets, "Financial Aids for Students" and "Freshman Scholarships." Address all communications to: The Director, Student Financial Aids Office, Student Services Building, The Ohio State University, Columbus 10, Ohio.

UNIVERSITY COUNSELING AND TESTING CENTER

The University Counseling and Testing Center is a University facility established to meet the need for professional guidance to students and to provide technical service to college offices who also counsel students. It works in close cooperation with the college in advising students in relation to their long-term educational and vocational plans. This service is available free to all students in the University at any time vocational counseling is appropriate. Tests are also administered as requested by the college offices as part of their counseling program. A continuous research program is maintained for the improvement of counseling techniques and occupational information.

Student are encouraged to use the occupational library in the University Counseling and Testing Center which contains a large collection of books and pamphlets dealing with a wide range of occupations. Suggestions are also made as to seeking information from many other sources such as college Deans, Junior Deans, college faculty or other persons who may provide additional vocational orientation to assist the individual in making the best adjustment to life.

All students are welcome to the facilities of the University Counseling and Testing Center, located in the Student Services Building. Counseling may be requested by any student directly or a referral may be made by a college office or by any University faculty member.

LIBRARY FACILITIES

The University Libraries consist of all books owned by the University, and include over 1,150,000 volumes. The Main Library contains the major part of the book collections in the general field of the Humanistic studies. Other important divisions of the book collection, primarily in the field of the sciences, are housed in Departmental Libraries in the other University buildings. A catalog of the entire collection is maintained in the Main Library.

Any person may use the University collections for reference use within the Library rooms. Only faculty, staff, and registered students of the University may withdraw books for home use.

VI. SCHOLARSHIPS, AWARDS, AND HONORS

GENERAL SCHOLARSHIPS

General scholarships are classified as restricted or unrestricted and, whether set up by donors with special provisions for their awards or under the jurisdiction of the University Scholarship Committee for awards, are of two types—merit (general) scholarships or grants-in-aid. Open to enrolled or entering students, primarily residents of Ohio, the scholarships approximate $150 a year. High academic record, need, field of study, and promise are chief selection factors. Requirements are for enrolled and transfer students to hold a 3.0 cumulative point-hour ratio, or its equivalent, and for entering students to rank in at least the upper third of their high school graduating class. Applications may be secured in the office of the Director, Second Floor, Student Services Building. Applications should be filed, if possible, in the early Spring for the subsequent year, beginning Autumn Quarter.

GENERAL AWARDS AND HONORS

THE JOHN GORDON BATTELLE MILITARY PRIZE

The income of the John Gordon Battelle Fund, established in 1916, is to be used as a yearly prize for senior cadet officers in the ROTC for the best essay on a military tactical principle. Members of the Medical Corps are not eligible. The income is now sufficient to offer a substantial prize for the three best solutions.

THE SWORD OF '86

The Class of 1886 presented the Military Department with a prize sword to be presented to the outstanding First Year Advanced Course student in the ROTC Regiment, except Medical Department students. He has the privilege of wearing it for one year. At the close of the year, he is presented with a prize, and the Sword of 1886 is returned to the Military Department.

Since the sword is now an obsolete item of military equipment it is displayed in the Military Science Department and the prize is awarded to the Cadet Colonel at the annual President's Review. The Cadet Colonel is chosen for overall military and scholastic excellence.

THE AIR FORCE ASSOCIATION MEDAL

The Air Force Association Medal is awarded to the outstanding Advanced Course Air Force ROTC cadet. This association is an independent, nonprofit air power organization founded in 1946 with Lt. Gen. James Doolittle as its first president. The cadet who receives the award is designated by the Professor of Air Science and Tactics.

AIR FORCE RESERVE OFFICERS OF COLUMBUS AWARD

A scroll is presented to the Air Force ROTC Basic Student who through extracurricular activities has contributed most to the Air Force ROTC program at The Ohio State University. The cadet who receives this award is designated by the Professor of Air Science and Tactics.

RESERVE OFFICERS' ASSOCIATION AWARD

Each year the Professor of Air Science and Tactics choose one Senior, Junior, Sophomore, and Freshman Air Force ROTC student to receive the Reserve Officers' Association medal. The students are chosen for their high military and scholastic accomplishments.

PHI ETA SIGMA

Phi Eta Sigma is a freshman honor society. It was founded in 1923 to encourage and reward high scholastic attainment among the men members of the freshman class. There are now fifty chapters located in leading colleges and universities throughout the United States. In 1937 the organization was admitted to membership in the Association of College Honor Societies.

Eligibility for membership is based solely on scholarship. All freshman men who earn a scholarship average equivalent to or better than 3.5 cumulative point-hour ratio in their first Quarter of college will be elected. Membership is also extended for achieving the same 3.5 average on the basis of an entire first year's work.

COLLEGE OF AGRICULTURE SCHOLARSHIPS AND AWARDS

The College of Agriculture has a number of scholarships which are available to students of outstanding ability. A large number of these scholarships are available to high school seniors, upon graduation. Many other scholarships and awards are available to upperclassmen in college.

Additional information regarding the scholarships may be secured by writing the Dean's Office, College of Agriculture, The Ohio State University, Columbus 10, Ohio.

SCHOLARSHIPS FOR FRESHMEN

Agricultural Competitive Scholarships. Twenty scholarships are awarded each year to members of graduating classes of Ohio high schools through competitive examinations. Five scholarships are awarded in each of the four districts into which the state is divided for purposes of administration.

Each agricultural scholarship is good for twelve Quarters in the College of Agriculture and covers a part of the University incidental fees.

The examinations are administered to high school seniors under the supervision of the State Department of Education and the College of Agriculture.

Additional information may be secured by consulting the local school administrator, the County Superintendent of Schools, or by writing the College of Agriculture, The Ohio State University, Columbus 10, Ohio.

George B. Durell Memorial Scholarship. Established July 14, 1943, by a gift from the Union Fork and Hoe Company. The income is to be used for scholarships in the amount of $300 each year. The recipient shall be a male high school graduate who presents evidence of outstanding achievement in high school and will be selected from those competing in Agricultural Competitive Examinations. Such factors as scholarship, leadership, and personality will be considered.

The Kroger Company offers eight scholarships, each worth $200, to be awarded to prospective college freshmen on the basis of high school scholarship, leadership, community activities, and financial need. These scholarships are divided equally between boys and girls, that is, four in agriculture and four in home economics.

Applications should be filed on forms provided by the College of Agriculture, The Ohio State University, Columbus 10, Ohio. The applications should be on file in the Dean's Office by April 15.

The Sears Roebuck Foundation offers sixteen scholarships, each worth $200, to be awarded to prospective college freshmen on the basis of high school scholarship, leadership, community activities and financial need. Twelve of these scholarships will be awarded to boys in agriculture and four to girls in home economics.

Applications should be filed on forms provided by the College of Agriculture, The Ohio State University, Columbus 10, Ohio. The application should be on file in the Dean's Office by April 15.

Opekasit Scholarship. The Opekasit Foundation is providing several scholarships to farm boys with superior high school records who want to make farming, agricultural teaching, extension work or farm management their life work. The scholarships are worth $600 each, payable $150 annually. The recipient must be of good character, live on a farm, rank in upper twenty-five per cent of his class, show actual need for financial assistance and present evidence of participation in such activities as 4-H clubs, F.F.A., etc., in high school, church, and community.

Additional information may be secured by writing to the Dean's Office. Applications must be in by April 15.

Dairy Technology Scholarships. Several scholarships are available for high school graduates (male students) who plan to major in Dairy Technology. The scholarships vary from $150 to $300 and will be paid in three equal installments during the first three Quarters.

Awards are made on the basis of a written examination, personal interview, high school activities, scholarship, character and personality. Proficiency in mathematics, chemistry and physics is essential.

Applicants may secure information by contacting the high school principal or by writing directly to the Department of Dairy Technology, The Ohio State University, Columbus 10, Ohio.

J. R. Watkins Scholarship. The J. R. Watkins Company offers two scholarships, worth $100 each to a boy and a girl who have completed three years of 4-H club work. The scholarship will be awarded on basis of scholarship, leadership, community activities and need.

The application shall be made on a form supplied by the College of Agriculture, The Ohio State University, Columbus 10, Ohio. The application must be in by April 15.

The J. Weller Company of Fostoria is awarding $200 each year to an outstanding high school graduate who plans to major in Horticultural Processing. The application should be filed on forms provided by the College of Agriculture and on file in the Dean's office by April 15.

The Alpha Gamma Rho Fraternity will provide a $200 National Scholarship annually to an outstanding 4-H club boy. The state 4-H club leader may nominate one outstanding 4-H club boy annually. The nominations must be in by June 1.

The Hancock County Farm Bureau Cooperative Association, Inc. may award a scholarship to a worthy freshman male student from Hancock County.

Additional information may be secured by contacting the manager of the Hancock County Farm Bureau Cooperative, Findlay, Ohio, or the Dean's Office.

The Frances E. Brundige Memorial Scholarship was established by the Holmes County Foundation 4-H club. The recipient is recommended by the Holmes County 4-H club Foundation and the Ohio 4-H club Foundation Executive Council.

For additional information contact the County Agricultural Agent of Holmes County.

The Phi Upsilon Omicron Scholarship of $200 is awarded each year to an outstanding high school senior girl. Certain counties are designated each year as the ones from which girls may apply. The application must be in by April 15.

Direct all correspondence to: Scholarship Committee Alumnae Chapter, Phi Upsilon Omicron, School of Home Economics, The Ohio State University, Columbus 10, Ohio.

Future Home Makers of America Scholarship of $200 is awarded each year to an F. H. A. member ranking in the upper third of her senior class to be used in any Ohio college offering a home economics major. File applications by April 15.

Application should be made to: State Supervisor, Home Economics, Room 606, State Office Building, Columbus, Ohio.

Minnie Price Scholarship. The Minnie Price Scholarship of $300 was established by the Home Demonstration Council of Ohio in honor of Miss Minnie Price on the occasion of her twenty-fifth year of service at Ohio State. The recipient for the scholarship will be selected on April 15 each year, from those nominated by County Home Demonstration Councils. Qualifications to be considered include character, leadership, scholarship, need, and interest in home demonstration work. Additional information may be obtained from any Home Demonstration Agent in Ohio, or from the School of Home Economics, Campbell Hall, The Ohio State University, Columbus 10, Ohio.

The Ohio State Restaurant Association each year awards $300 to a freshman student who plans to major in Restaurant Management. Application must be filed by April 15 in the office of Director, School of Home Economics.

Faith Lanman Gorrell Scholarship was established in honor of Faith Lanman Gorrell, former director of the School of Economics. The award is made each year to an outstanding high school senior who plans to enroll in home economics. The application must be in the office of the Director of Home Economics by April 15.

The Shaw Elevator of London provides a $200 scholarship each year for one boy from Madison County who enrolls in the College of Agriculture. Applications are to be filed in the Dean's Office by April 15.

The C.E. Rowland Memorial Scholarship was established in 1955 in memory of C. E. Rowland, former county agricultural agent in Clark County. The Scholarship is awarded to a boy or girl from Clark County, who enrolls in agriculture or home economics at The Ohio State University.

SCHOLARSHIPS AND AWARDS FOR UPPERCLASSMEN

Sears, Roebuck Foundation Sophomore Scholarship. A $250 Sophomore Scholarship is awarded the Sears scholar who, as a freshman, showed outstanding achievement in scholarship, leadership and personality. Financial need will be considered when awarding the scholarship.

Ohio Dairy Boosters Association Scholarship was established January 21, 1947, by a gift from the Ohio Dairy Boosters Association. The Scholarship will be awarded by the committee on scholarships to an outstanding student majoring in Dairy Technology.

KDKA Agricultural Scholarship. The Westinghouse Radio Corporation, at Pittsburgh, Pennsylvania, will award a scholarship to a junior or senior enrolled in Agriculture. The scholarship award will be $100 for the school year, and will be based on character, leadership, scholarship and need. Applications should be filed on forms provided by the College of Agriculture and be in the Dean's office not later than April 10. Announcement of the selection will be made over KDKA Farm Hour in May each year.

The winner from Ohio will have the opportunity to compete with similar scholars from Pennsylvania State College and West Virginia University for three month summer employment with the KDKA Agricultural Department.

The Danforth Summer Fellowship for a Junior in Agriculture. The Danforth Foundation and Ralston Purina Company of St. Louis, Missouri, awards a fellowship to the most outstanding junior boy in Agriculture. The fellowship, which extends through August, consists of two weeks' study in St. Louis and two weeks of leadership training at the American Youth Foundation Camp on the shore of Lake Michigan.

The Charles A. Pfizer Co. Senior Scholarship. Students interested in the Agricultural Extension Service as a career and who have completed one or

more education courses in Extension may apply for the $250 scholarship made available by the Pfizer Company during the senior year. Ohio may nominate four candidates whose applications will be considered with the nominees from other states for the 20 scholarships. Students making application must, in addition to the above requirements, have had three or more years of successful 4-H Club membership. The prescribed application forms may be secured in Room 109, Agricultural Administration Building.

The Danforth Foundation Freshman Scholarship. Two weeks of leadership training at the American Youth Foundation is also awarded to the most outstanding freshman in Agriculture. The camp extends from the middle of August to the first of September. All expenses, except travel, are paid by the Danforth Foundation. Such factors as health, scholarship, leadership and character will be considered. The selection of the recipient is made by a scholarship committee from the College of Agriculture.

The Danforth Foundation Fellowship for a Junior in Home Economics is awarded each year to the most outstanding junior student in the School of Home Economics and consists of two weeks' study in St. Louis, Missouri, and two weeks of leadership training at the American Youth Foundation Camp on the shore of Lake Michigan. All expenses are paid by the Foundation.

The Danforth Foundation Freshman Scholarship, an all-expense award, is made by the Danforth Foundation each year to the most outstanding home economics freshman for two weeks of leadership training at the American Youth Foundation Camp on the shore of Lake Michigan.

Processed Limestone Association, Inc. will provide two scholarships, each worth $250, to be awarded to male seniors or juniors who are majoring in Agronomy. The scholarships will be awarded on the basis of scholarship, personality, financial need and character.

Applications should be filed by May 15 on forms provided by the Dean's Office, College of Agriculture, Townshend Hall. The recipients will be selected by a committee representing the Department of Agronomy, the Processed Limestone Association, Inc., and the Dean's office.

The National Plant Food Association will provide one scholarship, worth $200 to a male senior or junior who is majoring in Agronomy. The scholarship will be awarded on the basis of scholarship, personality, leadership and need.

Applications should be filed by June 1 on forms provided by the Dean's Office. The recipient will be selected by a committee representing the Department of Agronomy and the Dean's Office.

Ohio Farmer Scholarship is awarded each year to a senior or junior in agriculture or home economics who has demonstrated ability in writing and plans to follow a program that will lead to employment in the field of agricultural journalism.

The recipient shall be farm reared and have sincere interest in farming or homemaking and have demonstrated ability in writing for agricultural student publications, farm magazines, newspapers or other media.

The applications shall be on file in the Dean's Office, Townshend Hall, by May 15. Application blanks may be secured in the Dean's Office, Townshend Hall.

John Hancock Klippart Memorial Fund for Agriculture. This fund was established in 1937 by a bequest from Josephine Klippart to provide a prize or prizes to the students of agriculture who may achieve excellence or valuable original discoveries or expound original ideas of value in connection with Agriculture.

To be eligible for competition a student must submit copies by May 15 of material published throughout the school year. The awards are made in June by a committee selected by the Dean of the College of Agriculture.

Merrill-Palmer Appointments. Two seniors in home economics are eligible

each Quarter of the academic year to attend the Merrill-Palmer School in Detroit, where they have an opportunity for special study in child development. Students should make application early in the Spring Quarter of their junior year to the Director of the School of Home Economics.

The Extermital Scholarship is provided by the Extermital Chemicals, Inc. of Dayton, Ohio. The scholarship of $200 is awarded to a student majoring in applied entomology who has completed six Quarters of undergraduate work or the equivalent in the College of Agriculture, The Ohio State University.

The recipient shall be a male student who presents evidence of excellent scholarship, leadership and an interest in applied entomology.

The applicants shall file application blanks furnished by the Committee on or before May 15. Blanks may be obtained from the Dean's Office.

Seth Adams Scholarship Fund provides $240 annually to a student enrolled in Sheep Production (Animal Science 505).

The basis for the selection of the recipient of this scholarship is as follows:

1. The student must be a major in Animal Science and interested in either purebred or commercial sheep production.
2. To be eligible the student must have a cumulative point hour average of 2.8 or higher.
3. To be eligible the student must present his application and an essay not to exceed two thousand words on "The Place of Sheep in a Grassland Farming Program" to the Department of Animal Science, Plumb Hall, The College of Agriculture, by the last day of Winter Quarter.

The Robert B. Stoltz Dairy Technology Fund was established in 1945 in honor of the late Robert B. Stoltz. The income is to provide an annual award to the outstanding senior student in the Department of Dairy Technology. The award is to be made by the chairman of the Department.

The W. Elaine Williams Memorial Scholarship was established June 15, 1951, by gifts from the family and friends of the late W. Elaine Williams. The income is to be used for a scholarship or scholarships to be awarded annually, the amount to be determined by the committee with a maximum of $300.

The recipient of the scholarship shall be selected on the basis of leadership as demonstrated in 4-H Club, Vocational Agriculture, Home Economics, Grange, Farm Bureau Youth Council, and church. Service in the college community, in camp organizations, and religious activities will also be considered.

To be eligible, the recipient shall have completed six Quarters or its equivalent in the College of Agriculture, including the School of Home Economics, and have a point hour ratio of 2.5.

The W. Elaine Williams Scholarship Committee will select the student to receive the scholarship.

The Borden Senior Scholarship (Agriculture). The Borden Company has established a fund from which one $300 scholarship is awarded annually to a student in the College of Agriculture. To be eligible, a student must have completed two courses in Dairy Science or Dairy Technology and one-hundred forty hours of credit, of which a minimum of ninety hours of credit must have been earned in the College of Agriculture at The Ohio State University.

The award will be made in the Autumn Quarter and the recipient selected on the basis of scholarship.

Awards are made by a committee representing Dairy Science, Dairy Technology, and the College Administration.

The Borden Senior Scholarship (Home Economics). The Borden Company has deposited a fund at the University from which one $300 scholarship is awarded annually to the senior Home Economics major with the highest scholastic record.

Floriculture Forum Scholarship. One $200 scholarship established by the Ohio State University Student Floriculture Forum to recognize a student majoring in Floriculture who has achieved a good scholastic record and shows promise for leadership. To be eligible the student should have completed five Quarters and 15 credit hours of Floriculture subjects. Applications should be filed in the College of Agriculture. Dean's Office, by April 10.

The Charles S. Plumb Fellowship is to be awarded each year to the junior student of special merit in Animal Science selected by the Animal Science Faculty. He is to make a visit of inspection of stock farms, preferably in Ohio and is to give a detailed report, two copies of which shall be bound and filed. The award amounts to approximately $100 each year.

Ohio 4-H Club Foundation scholarships may be awarded to undergraduates and graduates who are 4-H members, former club members, advisors and leaders. For application, apply to the Director of Agricultural Extension Service.

The Simon Lazarus Memorial Scholarship Fund provides an annual income of $6000, one-half (or $3000) of which is used for scholarships in the College of Commerce, and the remaining one-half in the Colleges of Agriculture, Arts, Education and Engineering. Initial selections of nominees are made by the college scholarship committee; final determination and selection is made by the University Scholarship Committee. Juniors and seniors only are eligible to apply.

A Food Technology Scholarship is awarded each year by the Ohio Valley Section of the Food Technology Association to an undergraduate majoring in Food Technology. Students who have completed one quarter are eligible. Submit application by May 15.

A Ralston Purina Scholarship of $500 is awarded to a senior or junior studying agriculture. The recipient must rank in the upper 25% of his class. Applications are to be filed by April 10.

The Fribourg Foundation Scholarship of approximately $500 will be awarded to a junior or senior who is interested in agriculture and has shown his interest by enrolling in Agricultural courses. File application by April 10.

A Gamma Sigma Delta Award of approximately $60 will be made each year to a senior, junior or sophomore who has completed at least three quarters of agriculture at The Ohio State University. Submit application by April 10.

An Alpha Gamma Rho Rotating Trophy is to be awarded each year to the most outstanding senior in agriculture. The award is based upon university-wide as well as college participation in extra curricular activities. Consideration is given to point hour ratio. The names of candidates may be submitted to the College office by April 10.

Ohio Poultry Council Scholarship. The Ohio Poultry Council, an organization representing all phases of the poultry industry, offers three scholarships, each of which carry an award of $250 for the school year. The awards will be made to students majoring in poultry science. The applications will be made on forms available in the Dean's office.

S. M. Salisbury Memorial Scholarship was established in honor of the late Professor S. M. Salisbury. The scholarship will be awarded to an outstanding junior or senior Dairy Science major.

Farm Bureau Co-Operative Association Grain Division Scholarships annually worth $225 each will be awarded annually to juniors or seniors majoring in Agricultural Marketing. To be eligible, the students must have completed three Quarters in the College of Agriculture.

Towers

An undergraduate honorary for students who have maintained a high scholastic average and proven themselves outstanding in extra-curricular activities.

Any student in the College of Agriculture, excluding Home Economics, who has completed at least five academic quarters or any transfer student who has completed two academic quarters in the College of Agriculture and is at least a third quarter sophomore, and has a cumulative point hour ratio of 2.75 or above is eligible for membership.

The membership is limited to fifty students.

Gamma Sigma Delta

Gamma Sigma Delta, the National Honor Society of Agriculture, recognition is awarded to 15 per cent of the senior class in the College of Agriculture. All of the members chosen must be included in the twenty-five per cent having the highest scholastic standing. They must also possess other qualities fitting them for honor of membership, as election is not based on scholarship alone.

The purpose of the society is "to encourage high standards of scholarship in all branches of agricultural science and education and a high degree of excellence in the practice of agricultural pursuits."

Degrees Cum Laude

Graduating students may be granted their degrees *cum laude* if their cumulative point-hour ratio places them in the upper ten percent of their class within this college. If their cumulative point-hour ratio places them within the upper three or four per cent of their class within this college, they may be granted their degree *summa cum laude.*

VII. GENERAL INFORMATION

The office of the College of Agriculture is located in Room 100, Agricultural Administration Building, on the West Campus across Olentangy River. The office is open from 8 A. M. to 5 P. M., except Saturdays and holidays. On Saturday, the office hours are from 8 A. M. to 12 M.

COUNSELING AND GUIDANCE

The College of Agriculture has two Assistant Deans and two counsellors who devote time to helping students with schedules, adjustment to new surroundings, vocational guidance, personal problems, and numerous other problems encountered by beginning students. They serve as the students' advisers until a faculty adviser is appointed. The Assistant Dean in charge of instruction is responsible for coordinating the counseling program in the College. Students entering the College of Agriculture are fortunate in knowing personally members of the teaching, experiment station, and extension staff. The staff members are always glad to talk with students about their problems.

First Quarter students will have an opportunity to have a conference with members of the faculty to discuss such matters as educational interests, employment, and other miscellaneous problems.

NEW STUDENTS

New students may consult with a representative of the deans' office regarding their schedules. A student may choose his field of major interest at any time and consult the deans' office regarding the appointment of an adviser in the field of his major. Students are encouraged to select their major field of interest early in their college program. The assignment of a faculty adviser will depend upon the major field of interest.

The programs of all students must be approved and the schedule card signed by the faculty adviser. Each student is encouraged to submit his complete program of studies for the last two years to the faculty adviser for approval.

ADMISSION TO THE COLLEGE OF AGRICULTURE

See page 3 for requirements for admission to the University.

It is essential that entering students possess a reasonable proficiency in English grammar and composition and in mathematics including algebra. If the entering student lacks such proficiency as demonstrated by placement tests, the student must correct this weakness by registering and passing designated courses (an additional fee will be charged for each review course). The number of credit hours required in these review courses will be added to the total hours required for graduation.

English—The student needing to schedule a review course must pass the course before registering for any other English course. (See English 400 on page 116).

Mathematics—The student needing to schedule a review course must pass the course before registering for Physics or Chemistry and any other course in Mathematics, or within three quarters after entering. (See Mathematics 400 and 401 on page 136).

It is suggested that the following units be among those presented for the College of Agriculture.

American History and Civics.....1 Unit
English .....4 Units
Algebra .....2 Units
Plane Geometry .....1 Unit
Chemistry or Physics .....1 Unit
Biological Science .....1 Unit

Courses in Vocational Agricultural and Vocational Home Economics will be accepted.

PLACEMENT SERVICE

Various departments within the College of Agriculture are responsible for the placement of students majoring in their departments. The student should arrange an appointment for an interview concerning employment with the chairman of the department in which he is majoring. It may also be helpful to discuss his qualifications, the type of work which is most suitable for him, and the techniques of getting a job.

The Dean's office also is interested in his placement and vocational adjustment. The College of Agriculture placement is designed to supplement the placement offered by the department in which he is majoring. The services of the college office and the college placement office are at the disposal of students for vocational guidance and of graduating seniors for advice and assistance in securing positions. Satisfactory placement, in the final analysis, depends upon the individual and the employer.

STUDENTS are urged to register early in the senior year. Many companies visit the campus during the Autumn Quarter and again late in the Winter Quarter to select their personnel. Other organizations arrange to be on the campus during the early part of the Spring Quarter only, to interview seniors. Applications should be in the college office at least two Quarters prior to the date of graduation.

ALUMNI AND OTHERS who are interested in changing positions will be given the same consideration as seniors. There are many requests for graduates with several years of successful experience. Each applicant who registers with the College Placement Officer is urged to keep the office informed regarding his job desires, employment, or change of positions. In lieu of ratings by members of the faculty he should ask two prominent members of his community to write the Dean's Office describing his personal characteristics.

Students are invited to come to the Dean's office at any time and as often as they wish to discuss their employment situation.

THE AGRICULTURAL EXTENSION SERVICE

The Agricultural Extension Service, sponsored cooperatively by the United States Department of Agriculture, the College of Agriculture, the Ohio State University and the respective counties of the state is administered within the College of Agriculture. Each county of the state is reached by Extension staff members located within the counties as County Agricultural Agents, Home Economics Agents, and Associate County Agents.

The Extension Service also provides a corps of highly trained specialists, who support the county staff in promoting an educational program in agriculture and home economics.

THE OHIO AGRICULTURAL EXPERIMENT STATION

In 1887, Congress provided for an Agricultural Experiment Station in connection with each Land-Grant College.

The experiment station was established to provide the people of the United States practical and useful information regarding the principles and applications of agricultural science.

The Ohio Agricultural Experiment Station is located at Wooster, ninety miles northeast of Columbus. County and district farms are located at strategic centers throughout the state for experimental and demonstrational purposes.

The Dean of the College of Agriculture is also Director of the Agricultural Experiment Station. Many members of the scientific staff also teach in the College of Agriculture. Opportunity is afforded graduate students to study at the Experiment Station.

Publications and information may be obtained by writing the Director, Ohio Agricultural Experiment Station, Wooster, Ohio.

HOME ECONOMICS

Home Economics is a School in the College of Agriculture and offers a variety of curricula.

See the School of Home Economics Bulletin for the curricula and descriptions of course offerings. These curricula lead to the degree of Bachelor of Science in Home Economics, Bachelor of Science in Food Technology, or Bachelor of Science in Nutrition.

Offerings in the School of Home Economics consist of the following curricula:

Child Development
Consumer Service in Home Furnishings
Consumer Service in Household Equipment
Foods and Nutrition
Food Technology
Home Economics Teaching and Extension
Home Management
Hospital Dietetics
Institution Management
Textiles and Clothing
Nutrition
Restaurant Management

VOCATIONAL EDUCATION

The College of Agriculture cooperates with the State Board for Vocational Education in the training of teachers of vocational Agriculture and teachers of vocational Home Economics.

The Smith-Hughes Act and George-Deen Act provide appropriations of Federal funds for the support of vocational education. In Ohio, these funds are made available to public schools for the training of young people for vocations of non-professional type. Following graduation, the College of Agriculture also provides a minimum of one year of itinerant teacher education.

SOIL CONSERVATION

By legislative direction, the Ohio Soil Conservation Committee was established in the College of Agriculture. The Dean of the College of Agriculture is a member of the Committee.

THE PLANT INSTITUTE

The Plant Institute of The Ohio State University is an organization within the College of Agriculture for furthering research with plants. It affords graduate students the combined facilities of the departments of Agronomy, Botany and Plant Pathology, Horticulture and Forestry, and Agricultural Biochemistry.

The instructional force and graduate students of these departments meet for the discussion of problems connected with plant life.

INSTITUTE OF NUTRITION AND FOOD TECHNOLOGY

In order to mobilize existing facilities and personnel for research and graduate study in nutrition and food technology, The Ohio State University and the Ohio Agricultural Experiment Station have organized an Institute of Nutrition and Food Technology. The objectives of this institute are:

1. To promote cooperative research in nutrition and food technology.
2. To organize and integrate instructional programs to enable students to receive training for specialized careers in nutrition and/or food technology.
3. To mobilize the talents and facilities of The Ohio State University and the Ohio Agricultural Experiment Station in a coordinated program of education for research toward the broad objective of "better health through better nutrition" for the American people.
4. To receive grants-in-aid for researches in nutrition and food technology, these grants to be administered for the Institute through the Research Foundation, the Development Fund, or the Experiment Station.

The subject matter areas participating in this program are quite diversified. Students interested in nutrition and/or food technology will be expected to enroll in a department and meet the departmental requirements for the degree sought. For the curriculum leading to Bachelor of Science in Food Technology, see page 64.

The governing body of the Institute is an Administrative Board consisting of the Dean of the Graduate School, the Director of the Agricultural Experiment Station, and the Director of the Institute.

INSTITUTE OF GENETICS

The Institute of Genetics brings together the members of the faculty of the University and of the staff of the Agricultural Experiment Station who are interested in research and teaching in genetics. The objectives of the Institute are: to promote research in genetics; to integrate the program of instruction in genetics in all departments concerned; to arrange special symposia, seminars, and lectures in the field of genetics; to assist in procuring funds for research in genetics; to encourage the publication of results of research in genetics, and to foster an appreciation of the role of genetics in man's social and economic welfare.

The Institute sponsors a non-credit seminar which is open to attendance by undergraduate and graduate students and by faculty members interested in genetics. The seminar meets at 4 p.m. on Fridays in Room 331 of the Botany and Zoology building, through the academic year.

NATURAL RESOURCES INSTITUTE

The Ohio State University has established a Natural Resources Institute which for administrative purposes is located in the College of Agriculture. Some of the purposes of the Institute are:

1. To stimulate and coordinate teaching and research in the conservation, development and wise use of natural resources.
2. To advise concerning the proper planning and integration of conservation subject matter in appropriate courses offered by established departments of instruction.
3. To promote the development of suitable major problems of study both graduate and undergraduate, leading to possible careers in the field of conservation.
4. To encourage and assist research within the University or in cooperation with other public agencies, foundations and interest groups.
5. To seek a wider audience among students whose major occupations may afford opportunities to advance the understanding of conservation problems and methods.
6. To stimulate thought and effort in conservation throughout the state through appropriate means of communication.
7. To establish close cooperative relationships with other agencies of government having an interest in natural resource conservation.

The work of the Institute is carried out through an executive director and an advisory council composed of the deans of the Graduate School, the Colleges of Agriculture, Arts and Science, Commerce and Administration, Education, Engineering, and the Director of the Research Foundation. Nearly all of the undergraduate colleges participate in developing in the Institute program. Students interested in majoring in some field of conservation may seek guidance from the Executive Director in selecting a field of specialization. They will be expected, however, to enroll in a department whose requirements must be met for the degree sought. Currently specialized programs of study in the conservation field are offered in the departments of Agronomy, Agricultural Economics and Rural Sociology, and Zoology and Entomology.

COOPERATIVE WILDLIFE RESEARCH STATION

The Ohio Cooperative Wildlife Research Station is located on the campus. It is supported by contributions through the United States Fish and Wildlife Service, the Ohio Division of Wildlife, and the Ohio State University for the purpose of scientific research in wildlife problems. Under the supervision of the director of the station, and in collaboration with various university departments, the actual work in field and laboratory is carried on by students working toward a Master's or a Doctor's degree. At intervals fellowships are available to such advanced students.

CONFERENCES AND SHORT COURSES

The College of Agriculture offers various short special courses or conferences in the nature of institutes or discussion programs in several areas. These courses are Agricultural Economics and Rural Sociology, Agricultural Education, Agronomy, Dairy Science, Dairy Technology, Floriculture, Horticulture, and Poultry Science. They vary in length from a few days to several weeks. There are no educational requirements for admission to these courses.

Special circulars describing the Short Courses will be mailed on request. (See page 75.)

SPECIAL NON-DEGREE PROGRAMS IN AGRICULTURE

Students with only a limited amount of time for college work, who wish to concentrate on agricultural courses for a few Quarters, may be permitted to enroll in a Special Program. These students must, however, clearly state in writing, their reasons for electing the program, and they must indicate their awareness of the consequences should they later decide to change to a degree program. For additional information on this program see page 69 of this bulletin and write the Dean in the College of Agriculture.

STUDENT ORGANIZATIONS

ALL-AGRICULTURAL COUNCIL

The All-Agricultural Council is an organization to further the interests of the students in the College of Agriculture and correlate the activities of the student organizations for mutual benefit. The council also attempts to develop through the College office a closer relationship between the students and the faculty.

To fulfill these objectives, the Council undertakes such activities as a square dance in the Autumn Quarter, traditionally known as the "Barnwarmer"; "Calico Capers," the Winter Quarter square dance; and an old fashioned barbecue in the Spring Quarter.

The membership of the Council is made up of the presidents or representatives of the various student organizations, the student senate member from the college and ex-officio members, representing the Dean's office.

UNIVERSITY 4-H CLUB

Any student is eligible for membership in this club, the purpose of which is to maintain and to increase interest in 4-H Club work, to develop interest in community welfare, to promote leadership and cooperation among members, as well as a wide program to allow acquaintance and closer companionship of its members between one another and the college.

The purpose of the club is accomplished by the club projects carried on during the year. A few outstanding activities include, a fall openhouse for incoming freshmen early in the Autumn Quarter, a choral group, supply counselors for the Ohio 4-H Club Congress, and various parties.

Educational along with recreational activities combine to make the organization interesting and popular on the campus. Meetings are held twice each month in the Horticulture and Forestry Building.

UNIVERSITY GRANGE 1620

The University Grange is unique in that its members may remain in the group after leaving college. Because of this, the University Grange has as its foremost goal the training of students for organization leadership in post-college Grange affairs. The club also provides an opportunity for training in rural leadership.

The program of the Grange is social and recreational. Activities include social functions, participation in University affairs, participation in State Grange activities and an installation team.

All students in the Agricultural College who are Grange members are invited to become active in University Grange. Anyone interested in joining may be initiated or affiliated.

The University Grange meets every other Wednesday at 7:30 P. M. in the Horticulture and Forestry Building.

AMERICAN DAIRY SCIENCE ASSOCIATION

STUDENT AFFILIATE

The American Dairy Science Association aims to promote interest in the dairy industry and to provide a means whereby those interested in this profession may meet socially and gain additional knowledge of their field through educational programs sponsored at the meetings.

To achieve these goals, leaders of various phases of the industry are invited to meet with the organization to correlate the academic with the business world. Several social events are sponsored by the club during the year.

The ADSA is open to all undergraduate and graduate students majoring in Dairy Technology, Dairy Production, or closely allied fields.

Meetings are held on the second and fourth Thursdays of the month in Townshend Hall.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS

STUDENT AFFILIATE

The purpose of the American Society of Agricultural Engineers is to promote the interests of students in Agricultural Engineering that relate to their professional advancement and to their well-being.

The activities are professional, recreational, and social. Dances are held in the Autumn and Winter Quarters, and an annual picnic is arranged in the spring. Field trips are sponsored and paid for by the Society to various engineering projects and large industrial plants. Various other activities are promoted according to the interest of the members.

The Society meets in Ives Hall Auditorium twice each month.

THE FLORICULTURE FORUM

The Floriculture Forum is the organization on the campus that brings together all students interested in the fields of Floriculture and Ornamental Horticulture, and although its membership is chiefly made up of students majoring in these fields, it is open to all students.

The purpose of the organization is to promote social relationships between students in the Division of Floriculture and Ornamental Horticulture and their faculty. In addition, the Forum endeavors to further the advancement of Floriculture.

From time to time, outstanding men and women in the profession are presented in programs for the Forum. Each Quarter one or more social events are planned for the members and faculty, with the annual banquet and picnic as the highlights on the social program during the Spring Quarter.

Meetings are held twice each month in the Horticulture and Forestry Building.

HOME ECONOMICS CLUB

The Ohio State University Home Economics Club has as its aims the promotion of professional interests and the development of friendship among those enrolled in Home Economics. Any student enrolled in Home Economics is eligible for membership.

The club meets bi-monthly. The Freshman members hold additional meetings during Autumn Quarter. Interesting programs with a maximum of student participation are planned, including speakers, worthwile projects, and social events. A major project is support of a National Scholarship fund for international students to study home economics in the United States. Proceeds form the traditional "Pumpkin Prom" Autumn Quarter are assigned to this fund.

STUDENT HORTICULTURAL SOCIETY

The organization meets on the second and fourth Tuesdays of the month at 7:30 P. M. in the Horticulture and Forestry Building.

Any student interested in any phase of fruits, vegetables, flowers, or food processing is invited to join the Student Horticultural Society, the official organization representing the Horticulture Department. Programs are designed to provide a balance between social and informative activities. The society's aim is to present lectures which are of general interest to students in all divisions of Horticulture.

HORTICULTURAL PRODUCTS SOCIETY

The Horticultural Products Society's primary purpose is the promotion of interest in the fields of processing horticultural products and food technology.

Membership is open to students interested in the food processing industry and is made up largely of majors in Horticultural Products and Food Technology.

At various times throughout the year outstanding individuals from the food industry are guest speakers for the organization. The Society cooperates in setting up exhibits and demonstrations for the Division of Horticultural Products of the Department of Horticulture at the annual State Fair. Food Processors Short Course, and the annual Horticultural Open House. Social events are held during the year with the Christmas party and the Spring picnic as highlights.

Meetings are held every third Tuesday of each month at 7:30 P. M. in the Horticulture and Forestry Building.

POULTRY SCIENCE CLUB

The Poultry Science Club's membership is open to anyone in the College of Agriculture who is interested in poultry. Opportunity is offered for members to meet prominent men in the field of Poultry Husbandry. Each meeting includes a business session, program, and refreshments.

The club sponsors such activities as baby chick shows, dressed turkey shows, a dance, and a lunch stand in the Poultry Building during Farm and Home Week. Picnics, banquets, and an annual F. F. A. Judging Contest are also included in the year's program of events.

Meetings are held on the first and third Thursdays of each month at 7:30 P. M. in the Poultry Building. A bus leaves from the Veterinary Laboratory at 7:30 P. M.

AGRICULTURAL ECONOMICS CLUB

The Agricultural Economics Club is open to all students majoring in or interested in Agricultural Economics and Rural Sociology.

Through the meetings of the Agricultural Economics Club, an attempt is made to familiarize the members with pertinent and relative subjects of interest and importance to the associated fields of study. These meetings also afford an opportunity to meet fellow students and faculty, promoting a closer relationship among those interested in Agricultural Economics.

The meetings are held on the second and fourth Thursdays of each month in Townshend Hall.

SADDLE AND SIRLOIN CLUB

Saddle and Sirloin's chief objective is to promote animal science in the college. The club is in co-operation with the Animal Science Department, but membership is open to anyone interested in livestock.

Some club projects include: an open house for incoming students, a department meeting to become further acquainted with the faculty and the opportunities in the field, the Little International Livestock Show, an award banquet for the Livestock and Meat Judging Teams, a junior judging contest and more activities.

Meetings are held twice each month on alternate Tuesday evenings at Plumb Hall. If you are interested, Saddle and Sirloin will benefit from your membership.

TOWNSHEND AGRICULTURAL EDUCATION SOCIETY

Townshend Agricultural Education Society is an organization for students in the College of Agriculture who are interested in the development of their personal traits of leadership and social conduct. It features in particular the interests and needs of prospective teachers of vocational agriculture. The Society operates as a collegiate chapter of the Future Farmers of America.

The purposes of this organization are realized through planning and conducting a well balanced program of activities which is large and varied enough to permit all members to participate. The program is developed and outlined according to "goals" and "ways and means," classified in seven areas. The areas consist of leadership, cooperation, scholarship, public relations, earnings and savings, social and recreational, and conduct of meetings.

Society meetings are held on the second and fourth Tuesday evenings of each month.

UNIVERSITY FARM BUREAU YOUTH COUNCIL

The University Farm Bureau Youth Council sponsors and encourages worthwhile educational and social programs of interest to rural youth in the University. These objectives are fulfilled through democratic participation and discussion in educational, social and recreational programs. Membership is open to anyone interested in furthering these objectives.

A wide variety of activities are carried on at the regular meetings; some of which are group discussions, speakers, folk games including square dancing, and group singing, with an emphasis on leadership development.

Other activities of the Council include tours, picnics, cooperation with the Ohio Farm Bureau, and a recreation research and leadership training group.

Regular meetings are held on alternate Saturday evenings in the Ohio Union.

FLYING FARMERS CLUB

The organization is interested in promoting the economic, educational, scientific and recreational development of private flying and the advancement of the use of the airplane in the agricultural industry of Ohio. Anyone enrolled in the College of Agriculture is eligible for membership.

Through the meetings of the University Flying Farmers, an attempt is made to acquaint its members with activities of the Ohio Chapter of Flying Farmers, the School of Aviation here at the University, and latest developments in the field of aviation with regard to agriculture.

Meetings are held on the third Thursday night of each month.

THE OHIO STATE UNIVERSITY AGRONOMY CLUB

The Agronomy Club program fulfills three purposes: to help members gain additional knowledge and experience about crops and soils from that given in the classroom, to show members how often other fields are dependent upon the field of agronomy, and to help members develop personal qualities which will benefit them the rest of their life.

This is accomplished through a program that includes field trips, displays, movies, speakers, an essay contest, lunch stands, an annual banquet and a spring picnic.

The club is affiliated with the Student Section of Agronomia Education Division of the American Society of Agronomy.

Meetings are held on the first and third Thursdays of each month in the Horticulture and Forestry Building. Membership is extended to all interested students, regardless of major.

DAIRY TECHNOLOGY TOASTMASTERS CLUB

The club is organized for the purpose of allowing its members to become fluent after-dinner speakers, and to assist them in developing a facility in speaking extemporaneously. Every opportunity is afforded for expression in both prepared talks and extemporaneous speaking.

The club meets every other Wednesday throughout the year for a dinner meeting. The meetings have been held in the past and it is intended that they be held at the Ohio Union at 6:30.

THE WILDLIFE RESEARCH FORUM

The Wildlife Research Forum is open to all students interested in Wildlife Conservation and Natural History. It affords an opportunity to meet and participate in activities related to these fields.

Meetings are held twice each month on alternate Tuesday nights and additional field trips and special projects are planned. Programs include talks by well known biologists and conservationists, movies, and discussion dealing with subjects of interest to the group.

Any student interested in conservation or the related fields of vertebrate zoology or botany will find the Forum a good place to meet students with similar interests.

THE AGRICULTURAL STUDENT

The Agricultural Student is the official student publication of the College of Agriculture and the School of Home Economics. It is the oldest and largest agricultural college publication in America. *The Agricultural Student* has been published continually since 1894 and now has a circulation of nearly five thousand per issue. The magazine is sent to students, their parents, county agents, vocational agriculture instructors and the faculty of the College of Agriculture.

Any student in the College of Agriculture or the School of Home Economics may work on the staff. Staff membership offers the opportunity to gain experience in reporting, writing, editorial work, business administration and advertising. All interested students are invited to stop in at Room 305, Ohio Union, and meet the staff.

COOPERATIVE ARRANGEMENTS WITH OTHER COLLEGES

Hiram College. By cooperative arrangement with Hiram College a student may take the first three years at Hiram and approximately two years in the College of Agriculture at Ohio State University to meet the requirements for graduation from the Ohio State University.

Upon satisfactory completion of the minimum degree requirements of Hiram College and the requirements for graduation from the Ohio State University, the student will receive the Bachelor of Arts degree from Hiram College and the appropriate agricultural degree from the College of Agriculture, the Ohio State University.

Heidelberg College. A similar cooperative agreement exists with Heidelberg College. By this agreement a student may take his first three years at Heidelberg College and approximately two years in the College of Agriculture to meet the requirements for the Bachelor of Science degree in Agriculture at Ohio State University and the Bachelor of Arts degree at Heidelberg College. The student will be expected, of course, to complete the minimum degree requirements of both institutions in order to be eligible for these degrees.

VIII. CURRICULA IN THE COLLEGE OF AGRICULTURE

OBJECTIVES

The principal objectives of the College of Agriculture, including the School of Home Economics, are three fold: (1) to assist in the preparation of men and women to lead useful lives as individuals, family members, and citizens in a democracy, (2) to aid students in development of professional competency and skills necessary for careers in the many fields of activity associated with agriculture and home economics, (3) to provide for continuing intellectual growth, service and leadership vital to agriculture and society.

DEPARTMENTS

The resident instruction in the College of Agriculture is planned to prepare men and women for successful careers in agriculture, home economics, and related fields.

The following departments constitute the organization of the college:

Agricultural Biochemistry
Agricultural Economics and Rural Sociology, comprising Farm Management, Marketing, and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Botany and Plant Pathology
Dairy Science
Dairy Technology
Home Economics (School)
Horticulture and Forestry, comprising Floriculture and Ornamental Horticulture,, Horticultural Products (Processing), Pomology, Vegetable Crops, and Forestry
Poultry Science
Zoology and Entomology

GRADUATE COURSES

All departments in the College of Agriculture offer opportunities for graduate study. The Bulletin of the Graduate School gives full information concerning the requirements and nature of this work. The Graduate Bulletin may be obtained upon application to the University Examiner.

All graduate students registered in "600" courses are required to complete a certain amount of work in addition to that required of undergraduates. This may consist of reading additional books on the subject, the presentation of reports, or of such other work as the instructor in charge of the course may designate.

BASIC COURSE REQUIREMENTS

The following list of courses is required of all students who expect to receive the degree Bachelor of Science in Agriculture, except those majoring in Agricultural Education.

Required Courses

English 416, 417, 418 ..... 9 hours
Chemistry 411, 412..... 10 hours
Agricultural Biochemistry 410..... 3 hours
Botany and Zoology ..... 20 hours
(To be selected from Botany 401, 402, Zoology 401, 402, 403)

Social Science	15 hours
(Agricultural Economics 420 and Economics 406 and 5 hours to be selected from Political Science, Sociology or Rural Sociology.*	
Bacteriology, or Geology, or Mathematics† or Physics	10 hours
Agronomy 501	4 hours
Survey of Agriculture 401	1 hour
Physical Education 400, 401, 402, 403 (Men)	4 hours
Military Science or Air Science	12 hours
Total	88 hours

* **Economics 401 and 402 may be substituted for Economics 406 and the 5 hours selected from Political Science, Sociology, and Rural Sociology.**

† **Students who have failed the Mathematics Placement Test and who are in a curriculum where mathematics is not required, shall, during the first year, be required to schedule and pass Mathematics 400. Students planning to take work beyond the bachelor's degree should take college mathematics.**

Students who are majoring in the following curricula, Agricultural Economics and Rural Sociology, Agricultural Engineering (4 year), Agronomy, Animal Science, Dairy Science, Applied Entomology, Botany and Plant Pathology, Poultry Science, Plant Science, Genetics, Horticulture, or Zoology, must complete the 206 hours required for the degree from the following groups of courses:

1. **Technical Agriculture†**.....25 hours
The courses in this group are to be selected from at least three fields other than the one in which majoring. The areas from which these courses may be selected include:

Agricultural Biochemistry
Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Botany and Plant Pathology
Conservation
Dairy Science
Dairy Technology
Horticulture and Forestry
Poultry Science
Zoology and Entomology

2. **Social Science and Humanities†**.....20 hours
The courses in this group are to be selected from at least three of the following areas and in addition to required courses above.

*Agricultural Economics 605
Business Organization
*Economics
English
Fine Arts
Foreign Language
Geography
History
Journalism
Music
Philosophy
Political Science
Psychology
*Rural Sociology 505
*Sociology
Speech

3. **Major†**.....25–50 hours
Each student must select his major department by the end of the third Quarter or at such other time as designated in "instruction for scheduling courses." A minimum of twenty-five Quarter-credit hours in one department is required for a major in a curriculum.
Not more than fifty Quarter-credit hour in any one department will be credited toward a degree, except by special permission of the Executive Committee. Approval must be obtained before the course is taken.

4. **Free Electives**.....23-48 hours
Not more than 40 hours of the free electives outside the College of Agriculture, exclusive of advanced Military, Air, or Naval Science courses, shall be counted toward completing the requirements for the degree.

* **These may not be used to fulfill this requirement by students majoring in Agricultural Economics and Rural Sociology.**

† **The specific courses within these groups may be specified by the department in which the student is majoring.**

Students following specialized curricula in which a program of *required courses* must be completed will complete the requirements beyond the 88 hours specified above by following the program as outlined in the specialized curriculum of their choice.

PRACTICAL EXPERIENCE

The College of Agriculture is interested in providing a broad training which has a direct bearing on agricultural practices and business activities that are related to Agriculture. The student who pursues one of the programs offered in the college can be assured of a thorough training in the basic sciences and cultural courses as well as a complete understanding of the elements of agriculture as a science and as a business. A graduate with practical experience in the area of his major is better qualified for employment and will be given preference.

The type of practical, special or farm experience necessary for competency in the field and required for graduation will be determined by the department administering the curriculum in which the student majors.

Any questions regarding "work experience" should be directed to the department in which the student plans to major.

WORK IN OTHER COLLEGES OF THE UNIVERSITY

A student in Agriculture may elect courses beyond requirements from work offered in other colleges of this University. This includes courses offered by departments not administered by the Dean of the College of Agriculture and may be elected although they are not announced in this *Bulletin.* Professional courses offered by the Colleges of Dentistry, Law, Medicine, and Veterinary Medicine are not open to students in Agriculture.

SPECIAL PROBLEMS COURSES

701 Special Problems Courses may be elected by superior students who have shown promise of ability to do independent work. The following limitations are placed on the election of special problems courses by undergraduate students:

1. Credit in 701 Special Problems Courses which may be counted toward meeting the requirements for an undergraduate degree shall not exceed ten Quarter hours.
2. Students whose point-hour ratio is lower than 2.50 will not be permitted to elect special problem courses.
3. Permission of the instructor.

CHANGE OF CURRICULUM

When a student changes from one curriculum to another, he will follow the requirements of the selected curriculum which are in effect at the time of the change.

GRADUATION

RESIDENCE REQUIREMENT FOR A DEGREE

A candidate for a degree must secure credit by regular class enrollment for the full work of three Quarters. This work must be in courses offered by the College recommending the degree, and must be secured while in residence at this University.

Ordinarily the student must be enrolled in the college recommending the degree while completing the last two Quarters required of him, but the Executive Committee of that college may, for sufficient reason, waive compliance with this requirement to the extent of not more than one Quarter's work in

favor of a student who has done six full Quarters of satisfactory residence work at this University, including forty-five Quarter-credit hours completed during the junior and senior years.

APPLICATION FOR A DEGREE

A candidate for a degree in the College of Agriculture must file an application for the degree with the Secretary of his College before the end of the Quarter preceding the one in which he expects to graduate.

POINTS REQUIRED FOR GRADUATION

The number of credit points required for graduation shall amount to not less than 2.0 times the number of credit hours undertaken at this institution. (For Point System, see page 20.)

The number of credit points required for graduation from any College or School of this University *after the Spring Quarter, 1959*, shall amount to not less than 2.0 times the number of credit hours undertaken at this institution.

COMMENCEMENT—CONVOCATION

A special Convocation or Commencement shall be scheduled at the close of each Quarter for the conferring of degrees upon candidates who have fulfilled all the requirements of their respective courses.

ATTENDANCE AT CONVOCATION EXERCISES

All candidates for degrees are required to be present at their graduation convocation unless excused by the President.

Degrees Cum Laude

Graduating students may be granted their degrees *cum laude* if their cumulative point-hour ratio places them in the upper ten percent of their class within this college. If their cumulative point-hour ratio places them within the upper three or four percent of their class within this college, they may be granted their degrees *summa cum laude.*

IX. CURRICULA BY DEPARTMENTS IN THE COLLEGE OF AGRICULTURE

AGRICULTURAL BIOCHEMISTRY

Since biochemistry as such is primarily a graduate program the proposed curriculum has been designed to prepare students for graduate work in this area. The biochemist must not only be a chemist, but also a biologist, and furthermore, should have some idea of related fundamental and applied fields. Therefore, in planning the program emphasis has been placed on fundamental courses offering the student the broadest possible perspective. The curriculum is specifically designed for those interested in the chemistry of plants, animals and microorganisms as such and as it applies to problems in foods, nutrition, plant and animal production.

The curriculum requires 210 hours for graduation.

The following program of required courses is designed to provide the minimum requirements for the Bachelor or Science degree in Agricultural Biochemistry.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Chemistry	(413) 5
Mathematics	(416) 5	Mathematics	(417) 5	Mathematics	(418) 5
English	(416) 3	English	(417) 3	English	(418) 3
Survey of Agriculture	(401) 1	Military or Air Science	2	Elective	3
Military or Air Science	2	Physical Education (Men)	(402) 1	Military or Air Science	2
Physical Education (Men)	(401) 1	Physical Education (Men and Women)	(400) 1	Physical Education (Men)	(403) 1
Physical Education (Women)	(421) 1	Physical Education (Women)	(422) 1	Physical Education (Women)	(423) 1

SECOND YEAR

Chemistry (421) 4 or Chemistry (431) 5	4 or 5	Chemistry (422) 4 or Chemistry (432) 5	4 or 5	Chemistry (423) 4 or Chemistry (433) 5	4 or 5
Physics	(411 or 431) 5	Physics	(412 or 432) 5	Physics	(413 or 433) 5
Mathematics	(536) 5	Mathematics	(537) 5	Botany (401) or Zoology (401)	5
Military or Air Science	2	Elective	3	Elective	3
Physical Education (Women)	(425) 1	Military or Air Science	2	Military or Air Science	2
		Physical Education (Women)	(426) 1	Physical Education (Women)	(427) 1

THIRD YEAR

Chemistry	(647 or 655) 3	Chemistry	(648 or 657) 3	Chemistry	(659) 3
Chemistry	(649 or 656) 3	Chemistry	(650 or 658) 3	Chemistry (660) 3 or Chemistry (741) 4	3 or 4
Agricultural Economics	(420) 5	French or German	5	French or German	5
French or German	5	Bacteriology	(607) 5	Agricultural Biochemistry	(601) 3
Botany (402) or Zoology (402)	5	Economics	(406) 5	Agricultural Biochemistry	(609) 3
Elective	3 or 5				

FOURTH YEAR

Elective	18	Agricultural Biochemistry	(707) 5	Elective	18
		Elective	13		

Electives must include:

10 hours	Botany 605, 606, or Physiology 601, 602 or 604, 605 or Bacteriology 633 and five additional hours of bacteriology.
5 hours	In addition to and beyond the required agricultural biochemistry courses above.
10 hours	Selected from the Departments of Animal Science, Agronomy, Dairy Science, Dairy Technology, Horticulture, Poultry Science.
12 hours	Selected from the following areas or Departments of Economics, Classical Languages, English, Fine and Applied Arts, Geography, German, History, Journalism, Music, Philosophy, Political Science, Psychology, Romance Languages, Russian, Sociology, Speech.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

This curriculum is divided into three major divisions, namely, Farm Management, Marketing, and Rural Sociology. The work in Farm Management is planned for those who expect to engage in practical farming, as operators, either for themselves or for others. It also offers opportunity for training in more specialized fields, such as land appraisal or various types of field work with farmers. The Marketing work should be of interest not only to those who expect to farm, but also to those who intend to enter the field of marketing farm products. Rural Sociology is for those who expect to work with rural people and organizations. Training is provided for Agricultural Missions, Foreign Agricultural Service, Public Relations, Agricultural Journalism and Farm Policy.

Any one of the three outlined options in Agricultural Economics and Rural Sociology may by the choice of electives be adapted to a course of study giving more consideration to matters of public policy toward agriculture, such as government, credit and taxation.

This curriculum requires 206 hours for graduation.

The following *suggested program* of courses is recommended by the Department of Agriculture Economics and Rural Sociology.

Satisfactory completion of the requirements listed under general curricula on pages 38 and 39 will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR

Chemistry	(411)	5	Chemistry	(412)	5	Agr. Economics	(420)	5
Botany or Zoology	(401)	5	Botany or Zoology	(402)	5	Botany or Zoology	(401)	5
Elective		5	English	(416)	3	English	(417)	3
Survey of Agriculture	(401)	1	Physical Education	(400)	1	Elective		5
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
Military or Air Science		2	Military or Air Science		2	Military or Air Science		2
		19			17			21

SECOND YEAR

English	(418)	3	Economics	(402)	5	Agronomy	(501)	4
Agr. Biochemistry	(410)	3	Mathematics	(417, 422 or 435)	5	Zoology	(403)	5
Economics	(401)	5	Speech	(401)	5	Elective		5
Mathematics	(416 or 421)	5	Military or Air Science		2	Military or Air Science		2
Military or Air Science		2						
		18			17			16

Electives for the first and second years for:

Majors in Farm Management:

Agricultural Engineering 401; Animal Science 401, 402; Poultry Science 401; Agronomy 403, 510, 520; Dairy Science 512.

Majors in Marketing:

Agricultural Engineering 401; Animal Science 401, 402; Horticulture 402; Poultry Science 401; Dairy Science 512; Agronomy 403, 510, 520.

Majors in Rural Sociology:

Electives to be selected from Group II (Technical Agricultural Courses).

Care must be taken that the basic college requirements on page 42 are completed by the end of the third year.

FARM MANAGEMENT MAJORS

THIRD YEAR

Agricultural Economics (502 or 613)	5	Rural Sociology (505)	5	Agricultural Economics (502 or 613)	5
Political Science (599)	3	Political Science (595)	3	Business Organization (621)	3
Elective	10	Agricultural Economics (612)	3	Geology (401 or 451) or Bacteriology (509 or 607), or Physics (411)	5
		Elective	5	Elective	3
	18		16		16

FOURTH YEAR

Agr. Economics (602)	3	Agr. Economics (605)	3	Agr. Economics (618)	3
Business Organization (504)	3	Animal Science (608)	5	Agr. Engineering (507)	5
Elective	10	Elective	8	Elective	8
	16		16		16

Recommended Social Science and Humanities electives for the third and fourth years. (A minimum of 9 hours in addition to those specifically listed must be included.)

English 519
History 403, 404
Journalism 508
Philosophy 400, 402, 406
Speech 402, 603
Psychology 401
Foreign Language

Recommended Technical-Course (agricultural and other) electives for the third and fourth years:

Accounting 405
Agricultural Economics 603, 610, 615, 628
Agricultural Engineering 401, 503, 605
Agricultural Education 526
Agronomy 403, 510, 520, 525, 601, 603, 604, 611
Animal Science 401, 402, 502, 503 505
Business Organization 551
Dairy Science 512, 626
Economics 520, 522
Entomology 551
Poultry Science 401, 620
Rural Sociology 506, 606, 609, 611

MARKETING MAJORS

THIRD YEAR

Agr. Economics (502 or 613)	5	Agr Economics (603)	5	Agr. Economics (502 or 613)	5
Political Science (599)	3	Agr Economics (612)	3	Geology (401 or 451) or Bacteriology (509 or 607), or Physics (411)	5
Accounting (405)	5	Elective	8	Elective	5
Elective	5				
	18		16		15

FOURTH YEAR

Rural Sociology (609)	3	Agr. Economics (605)	3	Agr. Economics (614)	3
Business Organization (504)	3	Elective	13	Elective	13
Elective	11				
	17		16		16

A minimum of two marketing courses will be selected from the following:

Agricultural Economics 628, 633
Animal Science 608
Dairy Science 626
Poultry Science 603

Recommended Social Science and Humanities electives for the third and fourth years. (A minimum of 12 hours in addition to those specifically listed must be scheduled.)

English 519
French 401, 402
German 401, 402
History 403, 404
Journalism 508
Philosophy 400, 402
Political Science 595
Psychology 401
Spanish 401, 402
Speech 402, 603

Recommended Technical-Course (Agriculture and other) electives for the third and fourth years:

Accounting 616
Agricultural Economics 610, 615, 616, 618
Agricultural Education 526
Agricultural Engineering 401
Agronomy 403, 510, 511, 520
Animal Science 401, 402
Business Organization 621, 623, 625, 650, 700, 709, 713, 716
Dairy Science 512
Economics 520, 522, 618
Horticulture 402, 423, 524
Poultry Science 401, 618

RURAL SOCIOLOGY MAJORS

THIRD YEAR

*Sociology	(401) 5	Anthropology	(501) 5	Sociology	(600) 4
Psychology	(401) 5	Rural Sociology	(506) 5	Rural Sociology	(506) 3
Agr. Extension	(501) 3	Sociology	(505) 5	Agr. Economics	(615) 3
Elective	3	Elective	3	Psychology	(521) 3
				Geology (401 or 451) or Bacteriology (509 or 607), or Physics (411)	5
	16		18		18

* Unless taken during first or second year.

FOURTH YEAR

Rural Sociology	(611) 4	Agr. Economics	(603) 5	Elective	15
Rural Sociology	(609) 3	Agr. Economics	(605) 3		
Sociology	(625) 5	Anthropology	(633) 3		
Electives	5	Sociology	(623) 3		
		Elective	3		
	15		17		15

Technical Agricultural Courses

A minimum of 10 hours must be scheduled from the technical agricultural group during the last two years, if 15 hours were elected from the group during the first two years. Zoology 412 should be scheduled as partial fulfillment of this group requirement.

Social Sciences and Humanities Courses

A minimum of 7 hours in addition to those specifically listed must be scheduled in the social sciences and humanities group. The courses in philosophy, history, and political science are listed below may be used to fulfill this requirement.

Recommended Electives for the Third and Fourth Years:

Anthropology 639
Economics 660
Political Science 595, 599
Philosophy 510
Psychology 610
Speech 603
Social Administration 511
Sociology 676, 677
Zoology 512

AGRICULTURAL ECONOMICS (AGRICULTURAL BUSINESS)

This curriculum is designed to provide training for students interested in engaging in Business allied with Agriculture and the Agriculture Industry, such as farm credit and finance, farm supplies, marketing, selling, etc. Provision has been made for basic training in both Agriculture and Business.

Opportunities for graduates with training and experience in Agriculture, coupled with training in the basic principles of Business, are numerous and expanding.

This curriculum requires 210 hours for graduation.

The following program of "required" courses is designed to provide the minimum training for a degree of Bachelor of Science in Agriculture, with a major in the field of Agriculture Business.

FIRST YEAR

Chemistry	(411)	5	Chemistry	(412)	5	Agr. Economics	(420)	5
Botany	(401)	5	Botany	(402)	5	Agr. Biochemistry	(410)	3
or			or			English	(417)	3
Zoology	(401)		Zoology	(402)		Botany	(401)	5
Elective		5	English	(416)	3	or		
Survey of Agriculture	(401)	1	Elective		5	Zoology	(401)	
Physical Education	(401)	1	Physical Education		1	Physical Education	(400)	1
Military or Air Science		2	Military or Air Science		2	Physical Education		1
						Military or Air Science		2
		19			21			20

SECOND YEAR

Economics	(401)	5	Economics	(402)	5	Accounting	(405)	5
Mathematics	(416 or 421)	5	Mathematics	(417, 422, 435)	5	Zoology	(403)	5
English	(418)	3	Agronomy	(501)	4	Speech	(401)	5
Elective		3	Military or Air Science		2	Military or Air Science		2
Military or Air Science		2						
		18			16			17

Electives for the first and second years must be selected from the following:

Agricultural Engineering 401
Agronomy 403, 510, 511, 520
Animal Science 401,* 402*
Horticulture 402
Poultry Science 401
Agricultural Extension 501
Dairy Science 401

Care must be taken that the basic college requirements on page 38 are completed by the end of the third year.

THIRD YEAR

Agr. Economics	(502 or 618)	5	Agr. Economics	(612)	3	Agr. Economics	(502 or 618)	5
Business Organization	(504)	3	Geology (401 or 451)			Agr. Economics	(614)	3
Elective		8	or Bacteriology (509 or 607), or Physics (411)		5	Elective		8
			Elective		10			
		16			18			16

FOURTH YEAR

Business Organization	(621)	3	Agr. Economics	(605)	3	Elective		16
Political Science	(599)	3	Political Science	(595)	3			
Elective		11	Elective		10			
		17			16			16

* Should be scheduled before the senior year if student plans to take Animal Science (608).

Technical Agricultural Courses

To comply with the college requirements (page 42) a minimum of 12 hours of Technical Agricultural Courses must be scheduled in the third and fourth year in addition to the 18 hours elected in the first two years. These may be selected in any of the departments in the college except Agricultural Economics and Rural Sociology.

Social Sciences and Humanities Courses

To comply with the college requirements (page 42) a minimum of 9 additional hours of the following Social Sciences and Humanities must be scheduled in addition to those specifically listed.

English 519
Foreign Language courses
History 403, 404
Journalism 508
Philosophy 400, 402
Psychology 401, 409, 521
Speech 402, 603

Other Recommended Electives

A minimum of 32 hours must also be scheduled from the following courses with at least four of the courses to be selected in the College of Commerce.

Agricultural Economics 603, 610, 616, 618
Business Organization 551, 623, 625, 640, 650, 680, 700, 713, 716
Economics 510, 515, 520, 522, 618
Commodity Marketing Courses:
- Agricultural Economics 628 and 638
- Animal Science 608
- Dairy Science 626
- Poultry Science 620

AGRICULTURAL EDUCATION

This curriculum is designed primarily for students who wish to prepare for positions in vocational agriculture and agricultural extension. It is also appropriate for those who plan to become engaged in other forms of rural educational work such as missions and public relations. Demand for workers in agricultural education has usually exceeded the supply. To insure success in such employment one must have adequate farm experience, be well prepared in technical agriculture, be able to understand and get along with people and be thoroughly trained in the procedures and techniques of effective teaching.

Provision has been made in this curriculum for a broad training suited to the individual needs and interests. A total of 210 hours is required for graduation in vocational agriculture or agricultural extension. Students in the Department of Agricultural Education are required to be admitted to advanced standing before approval is granted to do student teaching. To be approved for advanced standing, a student must have attained a point-hour ratio of at least 2.25 in the agricultural and professional courses as well as at least a 2.00 point-hour ratio in all university work undertaken. This standard, as well as standards concerning farm experience, health, writing skills, speaking skills, and personality need to be met in order to secure a certificate to teach vocational agriculture or to be considered for a position in the agricultural extension service. These standards are administered by a guidance committee of the Department of Agricultural Education. Additional information may be obtained from the departmental office.

The following program of *required courses* was designed to provide the minimum of training for a degree Bachelor of Science in Agriculture, with a major in Agricultural Education.

FIRST YEAR

Animal Science	(401) 5	Agronomy	(403) 4	Agricultural Education	(456) 3
Botany	(401) 5	Botany	(402) 5	Horticulture	(402) 5
English	(416) 3	English	(417) 3	English	(418) 3
Survey of Agriculture	(401) 1	Chemistry	(411) 5	Chemistry	(412) 5
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
Physical Education	(408) 1	Physical Education	(402) 1	Physical Education	(403) 1
Physical Education	(401) 1				

SECOND YEAR

Agr. Economics	(420) 5	Agr. Education	(501) 5	Agr. Engineering	(512) 5
Poultry Science	(401) 5	Agr. Engineering	(504) 5	Agronomy	(501) 4
Agr. Biochemistry	(410) 3	Economics	(406) 5	Animal Science	(402) 5
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
Elective	5	Elective	3	Elective	3

THIRD YEAR

Agr. Education	(504) 5	Animal Science	(515) 5	Dairy Science	(501) 5
Agr. Education	(505) 5	Zoology	(403) 5	Agr. Economics	(502) 5
Agr. Education	(506) 5	Elective	8	Agr. Engineering	(518) 5
				Elective	3

FOURTH YEAR

Agronomy	(611) 3	Agr. Education	(624) 5	Elective	15
Elective	10	Agr. Education	(625) 5		
		Agr. Education	(626) 5		

Additional Natural Science—A minimum of 15 hours in at least two of the following departments or areas is required.

Astronomy	Chemistry	Mathematics
Bacteriology	Entomology	Physics
Botany	Geology	Zoology

Additional Social Science and Humanities—A minimum of 15 hours in at least three of the following departments or areas is required.

Business Organization	Geography	Political Science
Economics	History	Psychology
English	Journalism	Rural Sociology
Fine Arts	Music	Sociology
Foreign Language	Philosophy	Speech

Free Electives—A minimum of 17 hours, in addition to the other requirements, must be taken. These electives may be selected from any department or area in the University.

An additional 15 hours of free electives may be substituted for apprenticeship in agricultural education by those who can justify the same because of their objectives, previous training and experience, subject to the approval of their adviser.

AGRICULTURAL EXTENSION

The program of instruction for workers in Agricultural Extension is designed to give training in technical agriculture, the basic physical, biological and social sciences and in principles and methods of teaching.

Students interested in Agricultural Extension are advised to consult early in their college career with one of the persons teaching the courses in agricultural extension education in the department of Agricultural Education.

Qualifications for Extension workers:

Agricultural Extension courses are provided under Agricultural Education. The programs of the Department of Agricultural Education include, in addition to extension courses, training for rural ministry and other Agricultural Education areas. For a description of the courses offered in Agricultural Extension refer to Agricultural Education in this catalogue. If the student is interested in agricultural extension he should consider taking Agricultural Education 526 as an elective. Additional desirable electives are in the areas of Rural Sociology, Journalism and Speech.

AGRICULTURAL ENGINEERING

Two programs of study are offered by the Department of Agricultural Engineering: (1) the Agricultural Equipment Science curriculum leading to the degree of Bachelor of Science in Agriculture and (2) the Agricultural Engineering curriculum leading to the degree of Bachelor of Agricultural Engineering.

Students of the Agricultural Equipment Science curriculum receive a broad general training in agriculture which prepares them for sales and service work with business and organizations serving agriculture or for farming.

Students of the Agricultural Engineering curriculum receive basic engineering training, preparing them for design, research, development, teaching, consulting, and service work with the many industries and organizations serving agriculture. Graduates are eligible for certificates as professional engineers.

AGRICULTURAL EQUIPMENT SCIENCE
(FOUR YEAR PROGRAM)

The following program of courses is recommended. This curriculum requires 206 hours for graduation which must include five hours of college mathematics and five hours of college physics.

Satisfactory completion of the requirements listed under general curricula on pages 42 and 43 which must include a minimum of 30 hours of agricultural engineering courses will lead to the degree of Bachelor of Science in Agriculture. A total of 206 hours is required.

FIRST YEAR

Agr. Engineering	(401) 5	Botany	(402) 5	Mathematics	(417 or 422) 5
English	(418) 3	Agr. Engineering	(402) 3	English	(418) 3
Survey of Agriculture	(401) 1	English	(417) 3	Agr. Economics	(420) 5
Military or Air Science	2	Mathematics	(416 or 421) 5	Military or Air Science	2
Physical Education	(401) 1	Military or Air Science	2	Physical Education	(403) 1
Botany	(401) 5	Physical Education	(400) 1		
		Physical Education	(402) 1		

SECOND YEAR

Economics	(406) 5	Zoology	(401) 5	Zoology	(402 or 403) 5
Chemistry	(411) 5	Chemistry	(412) 5	Agr. Biochemistry	(410) 3
Physics	(411) 5	Physics	(412 or 413) 5	Agr. Elective	5
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
				Agr. Engineering	(509) 5

THIRD YEAR

Speech	(401) 5	Agr. Elective	5	Agr. Engineering	(507) 5
Agronomy	(501) 4	Agr. Engineering	(503) 5	Social Science or Humanities Elective	5
Agr. Elective	5	Rural Sociology	(505) 5	Agr. Elective	3
Agr. Engineering	(502) 3	Free Elective	3	Free Elective	5

FOURTH YEAR

Agr. Elective	5	Survey of Agriculture	(501) 1	Agr. Engineering	(600) 1
Social Science or Humanities Elective	5	Social Science or Humanities Elective	5	Agr. Engineering	(605) 5
Free Elective	5	Free Elective	3	Free Elective	8
		Agr. Elective	5		
		Agr. Engineering	(515) 3		

Technical Agriculture electives may be selected from the following list of courses:

Agronomy 403, 510, 511, 520, 608
Agricultural Economics 502, 602, 612
Animal Science 401, 402, 502, 503, 505
Conservation 401
Dairy Science 512
Entomology 451
Forestry 410, 411
Horticulture 402
Physics 420
Poultry Science 401

The Social Science and Humanities electives may be selected from the following list of courses:

Business Organization 504, 551, 621
Geography 503
History 403, 404
Journalism 508
Philosophy 400
Political Science 401
Psychology 401, 402

AGRICULTURAL ENGINEERING CURRICULA

The following curricula indicate the requirements for the degree of Bachelor of Agricultural Engineering and the combined degree of Bachelor of Agricultural Engineering and Master of Science. To be qualified for the latter, a student must attain a minimum cumulative point hour ratio of 2.75. Students meeting this requirement should submit an application to the Committee on Graduate Study of the department of agricultural engineering not later than one Quarter prior to the graduate year. The regular program requires 287 hours for graduation and the combined degree program requires 302 hours.

Students interested in training to be agricultural engineers should meet with an adviser of the department before or during the first Quarter's work.

FIRST YEAR

Mathematics College Algebra	(421) 5	Mathematics Trigonometry	(422) 5	Mathematics Calculus	(440) 5
Chemistry General	(416) 4	Chemistry General	(417) 4	Chemistry General	(419) 4
Engineering Drawing Principles	(401) 4	Engineering Drawing Descriptive Geometry	(403) 4	Engineering Drawing Principles	(405) 4
English	(416) 3	English	(417) 3	English	(418) 3
Survey of Agriculture	(401) 1	Military or Air Science	2	Military or Air Science	2
Military or Air Science	2	Physical Education	(402) 1	Physical Education	(403) 1
Physical Education	(401) 1			Hygiene	(400) 1
Total	20	Total	19	Total	20

SECOND YEAR

Mathematics Calculus	(541)	5
Physics Mechanics	(431)	5
Civil Engineering Elementary Surveying	(412)	5
Agr. Engineering Introduction	(412)	3
Military or Air Science		2
Total		20

Mathematics Calculus	(542)	5
Physics Heat, Light, Sound	(432)	5
Agr. Engineering Farm Structures	(516)	3
Economics Principles of Economics for Engineers	(403)	3
Military or Air Science		2
Total		18

Mathematics Calculus	(543)	5
Physics Electricity and Magnetism	(433)	5
Agr. Engineering Field Machinery	(501)	5
Economics Principles of Economics for Engineers	(404)	3
Military or Air Science		2
Total		20

THIRD YEAR

Engineering Mechanics Statics	(521)	5
Agr. Engineering Soil and Water Management	(517)	5
Agronomy Soils	(501)	4
Mech. Engineering Thermodynamics	(601)	5
Total		19

Engineering Mechanics Strength of Materials	(602)	5
Agr. Engineering Farm Power	(520)	5
Electrical Engineering Electrical Engineering	(642)	4
Botany General	(401)	5
Total		19

Engineering Mechanics Dynamics	(607)	3
Agr. Engineering Farm Structures Design	(612)	5
Industrial Engineering Manufacturing Processes	(519)	5
Agronomy Field Crops Production	(403)	4
Psychology	(501)	3
Total		20

FOURTH YEAR

Agr. Engineering Advanced Farm Power Equipment	(613)	5
Agronomy Soil Physics	(608)	5
Engineering Mechanics Fluids	(610)	3
Animal Science Elective		5
*Agr. Engineering Summer Experience	(508)	5
Total		23

Agr. Engineering Electricity in Agriculture	(619)	5
Civil Engineering Concrete	(610)	4
Mech. Engineering Engineering Materials	(627)	5
Agricultural Elective		4
Non-technical Elective		0-3
Total		18-21

Agr. Engineering Soil and Water Conservation Engineering	(617)	5
Philosophy Logic	(402)	5
Agricultural Elective		5
English Reports	(519)	3
Total		18

FIFTH YEAR

(For Bachelor of Agricultural Engineering Degree Only)

Agr. Engineering Problem Solving	(702)	3
Speech	(401)	5
Technical Elective		8
Senior Survey	(501)	1
**Agr. Engineering Inspection Trip	(514)	2
Total		19

Agr. Engineering Problem Solving	(703)	3
Business Organization Contracts	(622)	3
Technical Elective		9
Non-technical Elective		3
Total		18

Technical Electives	6
Non-technical Electives	10
Total	16

FIFTH YEAR

(For Bachelor of Agricultural Engineering and Master of Science Degrees)

SUMMER QUARTER

Speech	(401)	5
Business Organization Contracts	(622)	3
Non-technical Elective		12
Total		20

* Agricultural Engineering 508, Summer Experience, should be taken during the Summer between the third and fourth years.

** Agricultural Engineering 514, inspection trip, will be taken the week prior to the beginning of the Autumn Quarter, fifth year.

GRADUATE YEAR

Graduate Elective	10	Graduate Elective	6	Graduate Elective	5
Agr. Engineering Advanced Studies	(798) 3	Agr. Engineering Advanced Studies	(798) 3	Agr. Engineering Advanced Studies	(798) 3
Agr. Engineering Seminar	(801) 2	Agr. Engineering Seminar	(801) 2	Agr. Engineering Seminar	(801) 2
Engineering Study Senior Survey	(501) 1	Agr. Engineering Research	(950) 4	Agr. Engineering Research	(950) 5
**Agr. Engineering Inspection Trip	(514) 2				
Total	18	Total	15	Total	15

** Agricultural Engineering 514, inspection trip, will be taken the week prior to the beginning of the Autumn Quarter, fifth year.

TECHNICAL ELECTIVES

Technical electives require approval by the departmental advisers. Some suggested technical electives are:

Agronomy 601, 603, 604
Agricultural Engineering 515, 798
Electrical Engineering 643, 644
Engineering Drawing 421, 710
Industrial Engineering 602, 662, 713
Mechanical Engineering 615, 620, 664, 736, 667, 673
Mathematics 608, 609
Welding Engineering 646
Civil Engineering 612, 620, 711, 713, 728
Physics 420, 644
Photography 520
Architecture 601, 602
Geology 435
Engineering Mechanics 605, 703, 706, 710

NON-TECHNICAL ELECTIVES

The non-technical electives provided in the fourth and fifth years of all curricula must be chosen with the consent of the advisers from courses offered in the following areas with the exception of those courses whose descriptions or titles indicate that they are specifically for engineers.

Accounting
Astronomy
Bacteriology
Botany
Business Organization
Economics
English
Fine Arts
Foreign Languages
General Studies
Geography
Geology
History
International Studies
Journalism
Music
Philosophy
Political Science
Psychology
Social Administration
Sociology
Speech
Zoology

AGRICULTURAL ELECTIVES

Agricultural electives require approval by departmental advisers. They should be selected from the following areas:

Animal Science
Dairy Science
Agronomy
Horticulture and Forestry
Agricultural Economics—Farm Management

GRADUATE ELECTIVES

Graduate electives will be carefully selected according to individual student needs and interests. The electives must be approved by the department graduate committee.

AGRONOMY

The field of Agronomy includes the subject matter of both crops and soils. Agronomy is the application of scientific principles to soil management and crop production.

TECHNICAL CURRICULA IN CROPS AND SOILS

Students who wish to prepare for research, collegiate teaching, or graduate study in agronomy should *not* take the Agronomy curriculum below, but should

follow the Plant Science curriculum with electives as outlined by advisers in the Department of Agronomy. The reason for this is that a thorough foundation in the fundamental sciences is more important for success in graduate work in Agronomy than having taken a large number of technical courses. Those who have an interest in graduate work in Agronomy are urged to contact Department specialists in their chosen field *not later than the beginning of the Sophomore year.* Earlier conferences with Department members are invited and urged.

The Agronomy sequence in the Conservation curriculum is also a technical Agronomy curriculum.

GENERAL CURRICULUM IN AGRONOMY

The training in agronomy prepares one with farm experience to return to the farm as a farm operator or manager. In the business world or in public service positions trained agronomists may work with machinery manufacturers, the Extension Service, local and national farm organizations, or carry on research. It also prepares one for soil survey work, for soil conservation technicians, and for specializations in plant breeding and seed production.

This curriculum requires 206 hours for graduation.

The following suggested program of courses is recommended by the Department of Agronomy.

See also the conservation curriculum.

Satisfactory completion of the requirements listed under general curricula on pages 38 and 39 will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR

Botany	(401) 5	Botany	(402) 5	Chemistry	(412) 5
Agr. Engineering	(401) 5	Chemistry	(411) 5	Entomology	(551) 5
Survey of Agriculture	(401) 1	English	(417) 3	Agronomy	(403) 4
English	(416) 3	Military or Air Science	2	English	(418) 3
Military or Air Science	2	Physical Education	(400) 1	Military or Air Science	2
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(403) 1

SECOND YEAR

Agronomy	(501) 4	Geology	(401) 5	Agronomy	(520) 4
Mathematics	(416 or 421) 5	Military or Air Science	2	Agr. Economics	(420) 5
Agr. Biochemistry	(410) 3	Agronomy	(510) 3	Physics	(413) 5
Military or Air Science	2	Agronomy	(511) 2	Military or Air Science	2
Physics	(411) 5	Elective	5		

THIRD YEAR

Bacteriology	(607) 5	Economics	(406) 5	Agronomy	(603) 5
Agronomy	(525) 3	Zoology	(403) 5	Botany	(419) 5
Animal Science	(402) 5	Elective	5-6	Elective	5-6
Zoology	(401) 5				

FOURTH YEAR

Agronomy	(604) 5	Agronomy	(601) 5	Elective	15-16
Agronomy	(611) 3	Physics	(644) 3		
Physics	(643) 3	Agronomy	(620) 3		
Elective	5-6	Elective	5-6		

It is suggested that the Technical Agricultural electives be selected from the following list of courses:

Agricultural Biochemistry 601, 609
Agricultural Economics 502, 602, 612, 613
Agricultural Engineering 401, 402, 502, 507, 605
Agronomy 611, 605, 608
Animal Science 401, 402, 502, 503, 505
Botany 601, 602, 605, 606, 651
Dairy Science 504, 512
Dairy Technology 401
Entomology 551, 555
Horticulture 402, 503, 504, 522, 622
Poultry Science 401
Zoology 630

It is suggested that the Social Science and Humanities electives be selected from the following list of courses:

Agricultural Economics 605
Business Organization 504, 551, 621
Economics 520, 624, 656
English 519, 540
French 401, 402
Geography 403 or 503
German 401, 402
History 505, 506
Journalism 503
Political Science
Psychology 401, 402
Rural Sociology 505
Spanish 401, 402
Speech 501

ANIMAL SCIENCE

The field of animal science is concerned with the selection, breeding, feeding, management, marketing, and processing of livestock and livestock products.

The student in animal science has many opportunities for specialization in the fields of pure bred or commercial production of beef or dual purpose cattle, swine, sheep, or horses. He may also work with meats, wool, or animal by-products in research, processing, distribution, or utilization.

Many majors in animal science are livestock breeders, herdsmen, farm managers, extension agents, teachers in agicultural colleges, research workers, market reporters, livestock market fieldmen, livestock salesmen, packer buyers, fieldmen for breed associations or farm organizations, salesmen for meats, feed, fertilizer and stockmen's supplies.

This curriculum requires 206 hours for graduation.

The following suggested program of courses is recommended by the Department of Animal Science.

Satisfactory completion of the requirements listed under general curricula on pages 42 and 43 will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR

Animal Science	(401)	5	Chemistry	(411)	5	Chemistry	(412)	5
English	(416)	3	English	(417)	3	English	(418)	3
Zoology	(401)	5	Zoology	(402)	5	Botany	(401)	5
Survey of Agriculture	(401)	1	Physical Education	(400)	1	Physical Education	(403)	1
Physical Education	(401)	1	Physical Education	(402)	1	Military or Air Science		2
Military or Air Science		2	Military or Air Science		2			

SECOND YEAR

Agr. Biochemistry	(410)	3	Agr. Economics	(420)	5	Dairy Science	(420)	3
Agr. Biochemistry	(411)	3	Zoology	(403)	5	Economics	(406)	5
Mathematics	(416 or 421)	5	Mathematics	(417 or 422)	5	Vet. Anatomy	(451)	5
Animal Science	(402)	5	Military or Air Science		2	Military or Air Science		2
Military or Air Science		2				Free Elective		

THIRD YEAR

Agronomy	(501)	4	Rural Sociology	(505)	5	Agr. Economics	(502)	5
Physiology	(506)	5	Physiology	(507)	5	Bacteriology	(607)	5
or			or			or Geology	(451)	5
Vet. Physiology	(416)	4	Vet. Physiology	(417)	4	or Physics	(411)	5
Elective in Major		5	Elective in Major			Elective in Major or		
Social Science or			or Free Elective		5	Elective in Social		
Humanities Elective		5	Social Science or			Science or Humanities		5
			Humanities Elective		3-or-5	Agr. Elective		3-or-5

FOURTH YEAR

Agr. Economics	(618)	5	Elective inMajor		5	Elective in Major		5
Agr. Elective		8 or 10	Agr.Elective		8 or 10	Agr. Elective		5 or 8
Elective in Major or			Free Elective		5	Elective in Social		
Free Elective		5				Science or Humanities		5

It is suggested that the Technical Agricultural electives be chosen from the following courses in at least three departments other than the one in which the student is majoring:

Agricultural Biochemistry 506, 507, 601, 609, 707
Agricultural Economics 602, 603, 605, 612
Agricultural Education 456, 526
Agricultural Engineering 401, 402, 502, 503, 507
Agronomy 403, 510, 511, 520, 601, 603, 604, 605, 607, 620
Botany 402
Conservation 401, 514
Dairy Science 512, 620, 612
Dairy Technology 401
Horticulture 402, 423, 503, 504, 522, 629
Forestry 410, 402

It is suggested that the student choose the Social Science and Humanities electives from the following courses:

Business Organization 504, 621, 623
Economics 618
English 519
General Studies 520
Geography 401, 403
History 403, 404
French, German or Spanish Language
Journalism 508
Political Science 401, 410, 595, 599
Philosophy 401, 402, 405, 406
Speech 401, 402
Psychology 401, 402

ANIMAL SCIENCE (TECHNICAL)

This curriculum is designed for students who wish to prepare for research or teaching positions in the animal science fields. Provision has been made for a broad training in the fundamental biological and physical sciences to serve as a foundation for graduate study.

The departments in which major study may be carried on are: Agricultural Biochemistry, Animal Science, Dairy Science, Poultry Science, and Zoology and Entomology. Some areas of specialization are animal nutrition, animal breeding, livestock production, poultry production, dairy production, and chemistry of food and nutrition. Specialists work in research, teaching, extension, writing, and advisory positions.

Opportunities are numerous with public research agencies, large feed companies, packing plants and other industries which employ research staffs to maintain quality and improve their products.

This curriculum requires 206 hours for graduation.

The following program of *required courses* was designed to provide the minimum training for a degree Bachelor of Science in Agriculture.

Care must be taken that the general requirements for all programs leading to the degree of Bachelor of Science in Agriculture as listed on page 42 are completed by the end of the third year.

FIRST YEAR

Chemistry	(411)	5	Chemistry	(412)	5	Chemistry	(413)	5
Mathematics	(416 or 421)	5	Mathematics	(417 or 422)	5	Mathematics	(418 or 440)	5
Zoology	(401)	5	Zoology	(402)	5	Animal Science or Poultry Science	(401) (401)	5
Survey of Agriculture	(401)	1	English	(416)	3			
Military or Air Science		2	Military or Air Science	(400)	2			
Physical Education	(401)	1	Physical Education	(402)	1	English	(417)	3
			Physical Education	(400)	1	Military or Air Science		2
						Physical Education	(403)	1

SECOND YEAR

Physics	(411)	5	Physics	(412 or 413)	5	Zoology or Botany	(403) (402)	5
English	(418)	3	Economics	(406)	5			
Agr. Biochemistry	(410)	3	Military or Air Science		2	Elective		5
Agr. Biochemistry	(411)	3	Botany	(401)	1	Military or Air Science		2
Agr. Economics	(420)	5						
Military or Air Science		2						

One of the following must be elected during the second year: Animal Science 402; Dairy Science 512; Poultry Science 410, or Chemistry 421.

THIRD YEAR

Physiology	(506) 5	Physiology	(507) 5	Agr. Biochemistry	(707) 5
Agronomy	(501) 4	Agr. Biochemistry	(601) 3	Bacteriology	(607) 5
*Foreign Language	5	Agr. Biochemistry	(609) 3	Elective	6
		*Foreign Language	5		

* The Foreign Language must be chosen with the approval of the student's adviser.

Electives in the fields of animal genetics, animal nutrition or animal production and marketing, or other courses subject to the approval of the adviser, may be taken during the third and fourth years.

FOURTH YEAR

Anatomy	(613) 5	Anatomy	(615 or 619) 5	Elective	15
Elective	9	Elective	10		

APPLIED ENTOMOLOGY

Studies will be made on the physiology, heredity, nutrition, anatomy, ecology, biology and taxonomy of insects with emphasis on the chemical and biological control measures. The curriculum is designed for students who wish to prepare for positions in teaching, extension, research, and regulatory work in state and federal bureaus, colleges, and commercial companies. It provides for a broad training in the basic sciences as a foundation for graduate stutdy with enough range in selection of electives to permit the development of some appreciation of the economic and social aspects of the world in which we live. Students specializing in this course of study should plan for at least one year of graduate work.

A minimum of 25 Quarter-credit hours in Entomology will constitute a major and the maximum credit in the department is 50 Quarter-credit hours to be applied toward graduation.

This curriculum requires 206 hours for graduation.

The following program of *required courses* was designed to provide the minimum training for a degree Bachelor of Science in Agriculture.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Chemistry	(413) 5
Botany	(401) 5	Botany	(402) 5	Horticulture	(402) 5
Zoology	(401) 5	Zoology	(402) 5	Zoology	(403) 5
Survey of Agriculture	(401) 1	English	(416) 3	English	(417) 3
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(403) 1
		Physical Education	(400) 1		

SECOND YEAR

Physics	(411) 5	Physics	(412) 5	Botany	(419) 5
Mathematics	(421) 5	Mathematics	(422) 5	Entomology	(551) 5
Entomology	(550) 5	Agr. Biochemistry	(410) 3	Geology	(401) 5
English	(418) 3	Agr. Biochemistry	(411) 3	Military or Air Science	2
Military or Air Science	2	Military or Air Science	2		

THIRD YEAR

Agr. Economics	(420) 5	Economics	(406) 5	Political Science	(401)
Elective	10	Agronomy	(501) 4	or	
		Elective	6	Rural Sociology	(505) 5
				or	
				Sociology	(401)
				Elective	10

FOURTH YEAR

Elective	15	Elective	15	Elective	15

Technical Courses: The student following this curriculum shall take, in addition to the required courses above, 25 hours from at least three of the following departments or areas: Seven hours must be in the College of Agriculture.

Agricultural Biochemistry
Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Bacteriology
Botany and Plant Pathology
Chemistry
Conservation
Dairy Science
Dairy Technology
Horticulture and Forestry
Mathematics
Photography
Poultry Science
Zoology and Entomology

Social Science and Humanities: The student shall take not less than 20 hours of courses selected from at least three of the following areas:

Agricultural Economics 605
Business Organization
Economics
English
Fine Arts
Foreign Language
Geography
History
Journalism
Music
Philosophy
Political Science
Psychology
Rural Sociology
Sociology
Speech

BOTANY AND PLANT PATHOLOGY

This curriculum has a two-fold purpose: (1) To provide fundamental training for students desiring to continue with a graduate program in preparation for teaching and research positions, and (2) To prepare students for various regulatory or technical positions in state and federal bureaus or for technical, sales or promotional work in industry.

Some of the fields of specialization toward which a student may point his educational program are: algology, mycology, plant anatomy, plant breeding and cytogenetics, plant ecology, plant morphology, plant pathology, plant physiology and plant taxonomy.

This curriculum requires 206 hours for graduation.

The following program of suggested courses is recommended by the Department of Botany and Plant Pathology.

Satisfactory completion of these courses and the minimum group requirements on pages 42 and 43 and enough additional hours to meet the requirements for graduation will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR					
Botany	(401) 5	Botany	(402) 5	Zoology	(401) 5
English	(416) 3	English	(417) 3	English	(418) 3
Mathematics	(416) 5	Mathematics	(417 or 435) 5	Chemistry	(411) 5
Survey of Agriculture	(401) 1	Military or Air Science	2	Military or Air Science	2
Military or Air Science	2	Hygiene	(400) 1	Physical Education	(403) 1
Physical Education	(401) 1	Physical Education	(402) 1	Elective	3-5
SECOND YEAR					
Chemistry	(412) 5	Agr. Biochemistry	(410) 3	Botany	(406) 5
Zoology	(402 or 403) 5	Agr. Biochemistry	(411) 3	Botany	(519) 5
Geology	(401) 5	Economics	(406) 5	Entomology	(550 or 551) 5
Agricultural Economics	(420) 5	Agronomy	(501) 5	Elective	3
Military or Air Science	2	Elective	3	Military or Air Science	2
		Military or Air Science	2		
THIRD YEAR					
Political Science or Sociology or Rural Sociology	5	Physics	(412 or 413) 5	Bacteriology	(550 or 607) 5
Physics	(411) 5	Elective	10-15	Elective	10-15
Elective	5-10				
FOURTH YEAR					
Elective	15-20	Elective	15-20	Elective	15-20

Electives for the third and fourth years must fulfill requirements of Technical Agriculture, Social Sciences and Humanities, Major and Free Electives as required on page 43.

CONSERVATION

The curriculum in conservation is designed to give as broad a background in the sciences, applied sciences, economics, and social sciences which contribute to an understanding of the relationships between the use of resources and human welfare as is possible within the undergraduate program of the college. Students who wish to specialize in areas related to the departments listed in the next paragraph may elect the curricula of those departments. Students who wish broad background may find that opportunity under the conservation curriculum.

By selecting an area of specialization and suitable electives a student will obtain an undergraduate major in conservation with specialization in an applicable vocational field such as soil conservation, wildlife management or other conservation areas. This is done by selecting one of the specilization sequences. The program of specialization may be under the direction of any one of the departments of agricultural economics, agricultural engineering, agronomy, animal science, botany and plant pathology, horticulture and forestry, zoology and entomology.

The student should choose his area of specialization by the fourth Quarter. He may then be assigned a departmental adviser with whose assistance the sequence and electives programs will be developed.

Specialization Sequences:

A student must elect from the following sequences that one appropriate to his area of specialization:

Farm Planning: Agricultural Economics 502, 602, 605, 612, 615. Students interested in this specialization may instead wish to major in farm management under the Agricultural Economics and Rural Sociology curriculum.

Soil Conservation: Botany 402 should be completed before the Junior year. The following are to be taken during the Junior and Senior year: Agricultural Economics 502, 615, Agricultural Engineering 507, Agronomy 601, 603. Students interested in soil conservation may wish to follow the general agronomy or plant science curriculum instead.

Wildlife Management: Both Botany 402 and Zoology 402 should be completed before the Junior year. Additional requirements in this sequence are: Zoology 408, 620, 629, 641 and Veterinary Anatomy 451 or Anatomy 407.

General Conservation: Students interested in an area of specialization other than those listed above or who wish to generalize in the broad field of natural resource conservation may develop an appropriate sequence and elective program in consultation with a general conservation adviser. Upon the approval of the proposed program by the College Office the final assignment of the student's adviser will be made.

This curriculum requires 206 hours for graduation. The following program of required courses is designed to provide the basic requirements for a degree of bachelor of Science in Agriculture plus some of the broad background basic to conservationists.

FIRST YEAR

Chemistry	(411)	5	Chemistry	(412)	5	Agr. Biochemistry	(410)	3
Botany	(401)	5	Botany or Zoology	(402)	5	Agr. Economics	(420)	5
Zoology	(401)	5	English	(416)	3	English	(417)	3
Survey of Agriculture	(401)	1	Elective		5	Conservation	(401)	3
Military or Air Science		2	Military or Air Science		2	Military or Air Science		2
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
						Physical Education	(400)	1

SECOND YEAR

English	(418) 3	Agronomy	(501) 4	Agronomy	(520) 4
Geology	(401 or 451) 5	*Economics	(401 or 406) 5	Economics	(402) 5
Mathematics	(416 or 421) 5	Mathematics	(417, 422,	or	
Agronomy	(403) 4		or 435) 5	equivalent in Rural	
Military or Air Science	2	Military or Air Science	2	Sociology, Sociology, or Political Science	
				Forestry	(410) 5
				Elective	5
				Military or Air Science	2

THIRD YEAR

Geography	(504) 3	Conservation	(514) 3	Elective	15
Zoology	(403) 6	Geology	(533) 3		
Elective	8	Elective	10		

FOURTH YEAR

Agronomy	(504) 5	Elective	15	Elective	15
Zoology	(640) 5				
Elective	5				

* Economics 406 or 5 hours in Sociology, Rural Sociology, or Political Science may be substituted for Economics 401 and 402.

ELECTIVES

Students are encouraged but not required to obtain field experience in some phase of conservation work before their senior year. Five hours credit may be granted for a minimum of 10 weeks field experience on a project given prior approval by the student's adviser. (See Conservation 561.)

Students interested in wildlife conservation are encouraged to elect summer courses, upon approval of the adviser, at the Franz Theodore Stone Laboratory. Wildlife conservation majors may apply such courses to meet technical group requirements below.

1. Social Science and Humanities. Students following this curriculum shall take 20 hours from at least three of the following departments or areas. Courses required of all candidates for the degree of Bachelor of Science in Agriculture may not be counted for credit in this group.

*Agricultural Economics 605
Business Organization
*Economics
English
Foreign Language
Geography
History
Journalism
Philosophy
Political Science
Psychology
*Rural Sociology 505
*Sociology
Speech

2. Technical Courses. Students are encouraged to use electives for further technical courses selected from departments of the College of Agriculture listed on page 43 and from other departments listed below.

Bacteriology
Education
Geology
Geography
Physics

DAIRY SCIENCE

This curriculum is designed to train students who expect to enter the fields of commercial dairy farming, dairy farm managers, breeding purebred dairy cattle, or dairy supervision.

With college training, a Dairy Science major may find many more fields of interest and employment in teaching, administration, extension work, research and sales. Examples of such employment include work with agricultural colleges and universities, feed manufacturers, dairy cattle associations, milk processors, breeding establishments and the federal government.

This curriculum requires 206 hours for graduation.

* Students specializing in Farm Planning may not count courses in these areas to satisfy Group 1 requirements.

The following *suggested program* of courses is recommended by the Department of Dairy Science. Satisfactory completion of the requirements listed under general curricula on pages 42 and 43 will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Agr. Biochemistry	(410) 3
Zoology	(401) 5	Zoology	(402) 5	Botany	(401) 5
Survey of Agriculture	(401) 1	English	(416) 3	English	(417) 3
Dairy Science	(401) 5	Military or Air Science	2	Agr. Elective	3
Military or Air Science	2	Physical Education	(402) 1	Dairy Science	(420) 3
Physical Education	(401) 1	Physical Education	(400) 1	Military or Air Science	2
				Physical Education	(403) 1

SECOND YEAR

Animal Science	(402) 5	Agr. Economics	(420) 5	Agricultural Elective	5
English	(418) 3	Zoology	(403) 5	Economics	(406) 5
Mathematics	(416 or 421) 5	Mathematics (417,422,		Bacteriology	(550) 5
Agr. Elective	3-5	429, or 435)	5	Military or Air Science	2
Military or Air Science	2	Dairy Science	(502) 3		
		Military or Air Science	2		

THIRD YEAR

Veterinary Physiology	(416) 4	Veterinary Physiology	(417) 4	Agr. Economics	(502) 5
or		or		Dairy Science	(507) 3
Physiology	(506) 5	Physiology	(507) 5	Social Science	
Social Science or		Dairy Science	(504) 5	or	5
Humanities Elective	3	Dairy Science	(620) 5	Humanities	
Bacteriology	(610) 3	Social Science		Elective	
Bacteriology	(611) 3	or Humanities Elective	3	Agronomy	(501) 4

FOURTH YEAR

Agr. Economics	(618) 5	Dairy Science	(626) 3	Dairy Science	(612) 3
Dairy Science	(610) 3	Dairy Science	(720) 5	Agr. Elective	5
Agronomy	(520) 4	Free Elective	5	Social Science or	
Major or Free Elective	5	Agr. Elective	5	Humanities Elective	5
				Free Elective	5

It is suggested that Technical Agricultural electives be selected from the following courses. Three departments must be represented:

Animal Science 401, 503, 509
Dairy Technology 401, 607
Poultry Science 401
Agricultural Biochemistry 411, 506, 507
Horticulture 402
Conservation 401
Entomology 551
Agricultural Economics 602, 603, 605
Agricultural Engineering 401, 402, 502, 503, 507
Agronomy 620

It is suggested that Social Science and Humanities electives be selected from the following courses:

Psychology 401
Speech 401, 402
Journalism 508
Political Science 401
Photography 511
Business Organization 621
History 403, 404
Romance Languages 401
German

Dairy Science majors are urged to discuss their background and farm experience with their adviser. The staff will assist the student in planning to acquire such experience as may be valuable to him.

DAIRY TECHNOLOGY

Training in the field of dairy technology offers paths of service in a constantly enlarging dairy products industry. This industry includes the processing and distribution of fluid milk and milk products such as butter, cheese, ice cream, dry milk, condensed milk and evaporated milk.

There is possibility of a great variety of types of work for the dairy technologist. Positions in business are available with commercial concerns, technical control laboratories, research work, retail and wholesale sales work in dairy organizations, dairy equipment companies, boards of health and manufacturers of various special dairy products.

This curriculum requires 206 hours for graduation.

The following program of *required courses* will provide a minimum of training and leads to the degree Bachelor of Science in Dairy Technology.

FIRST YEAR

Botany or Zoology	(401) 5	English	(416) 3	English	(417) 3
Mathematics	(416 or 421) 5	Mathematics (417, 422, 429 or 435)	5	Chemistry	(412) 5
Dairy Technology	(401) 3			Engineering Drawing	(400) 4
Survey of Agriculture	(401) 1	Chemistry	(411) 5	Military or Air Science	2
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(408) 1
Military or Air Science	2	Military or Air Science	2	Physical Education	(400) 1
Total	17	Total	16	Total	16

Summer: Dairy Plant Experience (415) 5

SECOND YEAR

Physics	(411) 5	Physics	(412) 5	Bacteriology	(550) 5
Agr. Biochemistry	(410) 3	Economics	(406) 5	Dairy Technology	(505) 3
Agr. Biochemistry	(411) 3	Dairy Technology	(503) 5	Military or Air Science	2
English	(418) 3	Military or Air Science	2	Electives	7
Military or Air Science	2				
Total	16	Total	17	Total	17

Summer: Dairy Plant Experience (515) 5

THIRD YEAR

Bacteriology	(610) 3	Dairy Technology	(607) 5	Dairy Science	(512) 5
Bacteriology	(611) 3	Accounting	(405) 5	Dairy Technology	(609) 3
Agr. Biochemistry	(501) 3	Electives	3	Dairy Technology	(511) 5
Agr. Engineering	(510) 5	Agr. Economics	(626) 3	Elective	3
Agr. Biochemistry	(502) 3				
	17		16		16

FOURTH YEAR

Dairy Technology	(651) 1	Dairy Technology	(652) 1	Elective	17
Dairy Technology	(610) 5	Dairy Technology	(605) 5		
Electives	10	Dairy Technology	(620) 3		
		Dairy Technology	(621) 3		
		Electives	3		
	16		15		17

Social Science and Humanities: A student following this curriculum shall take, in addition to the required courses listed, twenty-five (25) hours from at least three of the following areas:

Agricultural Economics	Fine Arts	Journalism	Psychology
Business Organization	Foreign Language	Music	Rural Sociology
Economics	Geography	Philosophy	Sociology
English	History	Political Science	Speech

FOOD TECHNOLOGY

This curriculum is designed to provide training in the more technological aspects of handling and processing of fruits and vegetables, selection, storing, and processing of meats and poultry, or in cereal products manufacture.

The curriculum is based upon the application of the principles of Chemistry, Mathematics, Physics, and Bacteriology to the manufacture, processing, and preservation of agricultural products.

This curriculum is designed to prepare students for positions in food industries, regulatory work, research and preparation for graduate work. A student may concentrate his electives in Agricultural Biochemistry, Animal Science, Horticulture, Home Economics, or Poultry Science.

This curriculum requires 210 hours for graduation.

The following program of *required courses* will provide a minimum of training and leads to the degree Bachelor of Science in Food Technology.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Chemistry	(413) 5
Mathematics	(416 or 421) 5	Mathematics	(417 or 422) 5	Horticulture	(423) 3
English	(416) 3	English	(417) 3	English	(418) 3
For Men		**For Men**		**For Men**	
Survey of Agriculture	(401) 1	Military or Air Science	2	Military or Air Science	2
Military or Air Science	2	Physical Education	(402) 1	Physical Education	(400) 1
Physical Education	(401) 1			Physical Education	(403) 1
				Elective	3
For Women		**For Women**		**For Women**	
Home Economics	(400) 2	Physical Education	(422) 1	Physical Education	(423) 1
Physical Education	(421) 1	Elective	2	Elective	5
Elective	3			Physical Education	(400) 1

SECOND YEAR

Physics	(411) 5	Physics	(412) 5	Chemistry	(421) 4
*Chemistry	(451) 5	*Chemistry	(452) 5	Physics	(418) 5
**Home Economics	(440) 5	Animal Science	(509)	Dairy Technology	(401) 3
		or		Elective	5
		Animal Science	(407) 3		
For Men		**For Men**		**For Men**	
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
		Elective	2		
For Women		**For Women**		**For Women**	
Physical Education	(425) 1	Physical Education	(426) 1	Physical Education	(427) 1
Elective	1	Elective	1-3	Elective	1

THIRD YEAR

Agr. Biochemistry	(609) 3	Agr. Biochemistry	(713) 5	Bacteriology	(607) 5
Agr. Biochemistry	(601) 3	Economics	(404) 3	Agr. Economics	(616) 3
Economics	(403) 3	Elective	10	Elective	8
Elective	10			Poultry Science	(618) 3

FOURTH YEAR

Bacteriology	(636) 3	Horticulture	(629) 5	Elective	13
Bacteriology	(637) 3	Elective	12		
Elective	10				

* Chemistry 647, 648, 649, 650 or Chemistry 655, 656, 657, and 658 may be substituted for these courses.

** Home Economics 440 should be taken in the freshman or sophomore year or be replaced by Home Economics (615) or Home Economics (610) 3 and Home Economics (635) 3.

SUMMER EXPERIENCE: Ten weeks of practical experience or its equivalent, including written report, is recommended for graduation.

Technical. A minimum of 25 hours in addition to those required in the fixed curriculum is to be selected from the following courses:

Agricultural Biochemistry 501, 502, 707
Agricultural Engineering 402, 510
Agronomy 501, 510, 511
Animal Science 401, 502, 503, 505, 510, 619
Bacteriology 610, 611, 634
Botany 401, 402
Chemical Engineering 691, 692, 693
Chemistry 422, 423, 681, 682, 683, 691, 692, 693, 795, 741
Dairy Science 401, 512
Dairy Technology 503, 505, 511, 609, 610, 620, 621
Engineering Drawing 400, 401, 402, 405
Geology 401, 402
Home Economics 441, 550, 551, 570, 615, 635, 506, 700
Horticulture 403, 503, 504, 522, 622, 624, 631
Mathematics 418, 440, 541, 542
Photography 511, 615
Poultry Science 401, 417, 521
Veterinary Anatomy 451
Veterinary Physiology 416, 417
Zoology 630, 401, 402, 403, 509, 412

Social Science and Humanities. A student following this curriculum shall take, in addition to the required courses listed above, 25 hours from at least three of the following departments or areas.

Business Organization
Economics
English
Fine and Applied Arts
Foreign Language
Geography
History
Music
Journalism
Philosophy
Physiology (Human)
Political Science
Psychology
Rural Sociology 505
Sociology
Speech

FORESTRY

(Department of Horticulture and Forestry)

Part of a curriculum in forestry is offered covering the first two years of the four or five year curricula as given at some of the recognized forestry schools throughout the country. This curriculum is so arranged that full credit at The Ohio State University as outlined below is allowed upon transfer to nearly any regular forestry institution at the beginning of the junior year, thereby making it possible for Ohio men interested in forestry as a profession to obtain their first two years' instruction at home.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Botany	(406) 5
Botany	(401) 5	Botany	(402) 5	English	(418) 3
English	(416) 3	English	(417) 3	Forestry	(408) 3
Survey of Agriculture	(401) 1	Mathematics	(416 or 421) 5	Mathematics	(417 or 422) 5
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(403) 1
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
		Physical Education	(400) 1		

SECOND YEAR

Agronomy	(501) 4	Civil Engineering	(402) 2	Forestry	(410) 5
Civil Engineering	(401) 5	Physics	(412) 5	Physics	(413) 5
Geology	(401) 5	Zoology	(401) 5	Zoology	(402) 5
Physics	(411) 5	Economics	(403) 3	Economics	(404) 3
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2

SECOND YEAR ELECTIVES:

Forestry 402
Entomology 550
Speech 401

GENETICS

The curriculum in Genetics has been especially designed for those students planning a professional career in genetics. Students wishing to specialize in genetics without intention of acquiring professional status ordinarily follow either the Animal Science or Plant Science curriculum. Students wishing to understand the practical applications of genetics to their own area of special study would follow one of the other curricula in any of which courses in genetics may be utilized as electives.

Professional status in the field of genetics is difficult to attain without graduate training. A thorough knowledge of both the zoological and botanical aspects of biology and a good understanding of the biological aspects of chem istry, physics and especially mathematics are all necessary.

Both undergraduates and graduate studies in genetics are administered as inter-departmental programs. To become qualified for professional work in genetics, animal breeding, or plant breeding, students should plan to continue as graduate students to the Master of Science or, preferably, the Doctor of Philosophy degree.

Instruction in genetics is offered by several departments. Fundamental and theoretical genetics is given by the Department of Botany and Plant Pathology and the Department of Zoology and Entomology. The courses in these departments are biological rather than strictly zoological or botanical in subject matter. Practical work in genetics is given by the various specialized departments such as Agronomy, Animal Science, Dairy Science, Horticulture, and Poultry Science.

A student following this curriculum must complete a minimum of 25 hours in the department of his major. Not more than 50 Quarter hours in any one department will be credited toward a degree.

This curriculum requires 206 hours for graduation.

The following program of *required courses* was designed to provide the minimum training for a degree of Bachelor of Science in Agriculture.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Chemistry	(413) 5
Botany	(401) 5	Botany	(402)	Botany	(402)
Zoology	(401) 5	or	5	or	5
Survey of Agriculture	(401) 1	Zoology	(402)	Zoology	(402)
Physical Education	(401) 1	English	(416) 3	English	(417) 3
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
		Physical Education	(400) 1	Physical Education	(403) 1
		Physical Education	(402) 1		

SECOND YEAR

Agr. Biochemistry	(410) 3	Physics	(412) 5	Mathematics	(418) 5
Agr. Biochemistry	(411) 3	Mathematics	(417) 5	Military or Air Science	2
Physics	(411) 5	Military or Air Science	2	*Social Science	5
Mathematics	(416) 5	*Social Science	5	Elective	5
English	(418) 3				
Military or Air Science	2				

THIRD YEAR

Zoology	(603) 5	Zoology	(613) 5	Bacteriology	(607) 5
*Social Science	5	Mathematics	(536) 5	Mathematics	(537) 5
Elective	6	Agronomy	(501) 4	Elective	3
		Elective	3		

FOURTH YEAR

Elective	16	Elective	16	Elective	15

Social Science and Humanities. A student following this curriculum shall take, in addition to the fixed subjects, a minimum of 20 hours from at least three of the following departments:

Business Organization
Economics
English
Fine Arts
Foreign Language
Geography
History
Journalism
Music
Philosophy
Political Science
Psychology
Sociology
Speech

Technical Courses. Students following this curriculum shall take, in addition to the fixed subjects, a minimum of 25 hours from at least three of the following departments:

Agricultural Biochemistry
Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Botany and Plant Pathology
Conservation
Dairy Science
Dairy Technology
Horticulture and Forestry
Poultry Science
Zoology and Entomology

* Social Science means Agricultural Economics 420 and Economics 406, or Economics 401 and 402, and 5 hours from Political Science and Rural Sociology.

HORTICULTURE

The field of Horticulture is concerned with the production, processing, and marketing of fruits, vegetables, flowers, and ornamental plants. Specialized training is offered in Floriculture and Ornamental Horticulture, Pomology, Vegetable Crops and Horticultural Products. The student may major in one of the following four divisions: Floriculture and Ornamental Horticulture, Pomology, Horticultural Products, or Vegetable Crops.

The following programs of *required courses* were designated to provide the minimum of training in the respective areas for the degree Bachelor of Science in Agriculture.

This curriculum, for each of the four divisions, requires 206 hours for graduation.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

Opportunities for graduates in Floriculture and Ornamental Horticulture lie chiefly in the commercial field. In Floriculture, positions available include greenhouse technicians, growers, foreman and managers, managers of flower stores, floral designers, wholesale commission house salesmen, seedmen, and brokers. In Ornamental Horticulture, graduates are offered employment as plant propagators, nursery foremen, nursery salesmen, city foresters, and as aborists. Graduates with Master of Science and Doctor of Philosophy degrees have excellent opportunities in teaching, research, and extension.

Note: For courses in Landscape Design see offerings listed under Architecture and Landscape Architecture, page 95.

FIRST YEAR

Botany	(401) 5	Botany	(402) 5	English	(418) 3
English	(416) 3	English	(417) 3	Horticulture	(440) 5
Horticulture	(402) 5	Horticulture	(403) 5	Zoology	(401) 5
Survey of Agriculture	(401) 1	Military or Air Science	2	Military or Air Science	2
Military or Air Science	2	Physical Education	(402) 1	Physical Education	(403) 1
Physical Education	(401) 1	Physical Education	(400) 1		

SECOND YEAR

Chemistry	(411) 5	Agr. Economics	(420) 5	Agr. Biochemistry	(410) 3
Entomology	(550) 5	Chemistry	(412) 5	Agr. Biochemistry	(411) 3
Horticulture	(550) 5	Elective	5	Economics	(406) 5
Military or Air Science	2	Military or Air Science	2	Elective	5
				Military or Air Science	2

THIRD AND FOURTH YEARS

The following courses are required for graduation:

Floriculture		Ornamental Horticulture (Nursery-Landscape Curriculum)	
Horticulture	(542) 5	Horticulture	(542) 5
Horticulture	(543) 5	Horticulture	(544) 5
Horticulture	(544) 5	Horticulture	(551) 5
Horticulture	(545) 5	Horticulture	(552) 5
Horticulture	(546) 3	Horticulture	(650) 5
Horticulture	(651) 3	Horticulture	(683) 5
Agronomy	(501) 4	Agronomy	(501) 4
Bacteriology	(607) 5	Bacteriology	(607) 5
or		or	
Geology	(401) 5	Geology	(401) 5
Botany	(419) 5	Botany	(419) 5
Botany	(605) 5	Botany	(605) 5
Botany	(606) 5	Botany	(606) 5
Entomology	(566) 5	Entomology	(566) 5
Zoology	(403) 5	Landscape Architecture	(550) 5
Social Sciences and Humanities (25 hours from at least three areas)		Zoology	(403) 5
		Social Sciences and Humanities (25 hours from at least three areas)	
Electives	(14 hours)	Electives	(5 hours)

Students under either curriculum must elect an additional 5 hours from Bacteriology, or Geology, or Mathematics, or Physics.

Ten weeks of practical experience or its equivalent, including a written report, is recommended for graduation.

Social Sciences and Humanities:

The twenty-five required hours must be selected from at least three of the following areas:

Business Organization	Geography	Political Science
Economics	History	Psychology
English	Journalism	Sociology
Fine Arts	Music	Speech
Foreign Language	Philosophy	

Technical Courses:

Electives may be chosen from the following areas:

Accounting	Dairy Technology
Agricultural Biochemistry	Geology
Agricultural Economics and Rural Sociology	Horticulture and Forestry
Agricultural Engineering	Mathematics
Agronomy	Physics and Astronomy
Animal Science	Landscape Architecture
Botany and Plant Pathology	Photography
Conservation	Poultry Science
Dairy Science	Zoology and Entomology

POMOLOGY

The Division of Pomology prepares students for positions both in the production field as well as in the allied horticultural industries. In the production area management of orchards and small fruit enterprises represents the major opportunity where the graduate does not return to his home farm. The allied industries include those which manufacture or sell supplies, machinery and equipment to enterprises engaged in fruit production.

Opportunities are available in the federal and state inspection services. Furthermore, a number of graduates have found positions in fields where a knowledge of fruit production is a very satisfactory qualification such as writing for horticultural publications, newspapers, or farm magazines.

Advanced degrees lead to a variety of openings in teaching, research and Extension in connection with State and Federal agencies. Research departments of firms concerned with agricultural production often employ individuals trained in pomology.

FIRST YEAR

Botany	(401) 5	Botany	(402) 5	Botany	(419) 5
English	(416) 3	English	(417) 3	Agr. Economics	(420) 5
Horticulture	(402) 5	Horticulture	(403) 5	English	(418) 3
Survey of Agriculture	(401) 1	Military or Air Science	2	Horticulture	(423) 3
Military or Air Science	2	Physical Education	(402) 1	Military or Air Science	2
Physical Education	(401) 1	Physical Education	(400) 1	Physical Education	(403) 1

SECOND YEAR

Horticulture	(509) 3	Horticulture	(522) 5	Agronomy	(501) 4
Entomoolgy	(550) 5	Chemistry	(412) 5	Agr. Biochemistry	(410) 3
Chemistry	(411) 5	Military or Air Science	2	Agr. Biochemistry	(411) 3
Zoology	(401) 5	Entomology	(566) 5	Military or Air Science	2
Military or Air Science	2	Elective	3	Elective (a)	5

(a) Geology, or Mathematics, or Physics.

THIRD YEAR

Botany	(605) 5	Botany	(606) 5	Horticulture	(622) 5
Horticulture	(503) 5	Horticulture	(504) 5	Horticulture	(511) 3
Elective (a)	5	Economics	(406) 5	Zoology	(403) 5
				Elective	3

(a) Political Science (401) or Sociology (401).

FOURTH YEAR

Botany	(650) 3	Elective	10	Agr. Economics	(628) 5
Horticulture	(609) 3	Horticulture	(712) 3	Elective	11
Horticulture	(518) 5	Bacteriology	(607) 5		
Elective	5				

Social Sciences and Humanities: A student following this curriculum, in addition to the fixed subjects in the above outline, is required to select a minimum of twenty hours from at least three of the following areas:

Business Organization	Geography	Political Science
Economics	History	Psychology
English	Journalism	Sociology
Fine Arts	Music	Speech
Foreign Language	Philosophy	

Technical Courses: Additional elective hours may be chosen from the following departmental areas:

Agricultural Biochemistry	Animal Science	Horticulture and Forestry
Agricultural Economics and Rural Sociology	Botany and Plant Pathology	Mathematics
	Conservation	Photography
Agricultural Education	Dairy Science	Physics
Agricultural Engineering	Dairy Technology	Poultry Science
Agronomy	Geology	Zoology and Entomology

A summer of practical experience on a well-managed fruit farm prior to graduation is recommended.

VEGETABLE CROPS

The Division of Vegetable Crops prepares students for positions connected with the commercial production and marketing of vegetables. In addition, graduates may be employed in allied industries servicing and supplying producers. Opportunities are available as well in transportation, inspection and regulatory services. Advanced work in the division leads to positions in teaching, extension, and research, either with federal or state institutions.

FIRST YEAR

Botany	(401) 5	Botany	(402) 5	Agr. Economics	(420) 5
English	(416) 3	English	(417) 3	English	(418) 3
Horticulture	(402) 5	Horticulture	(403) 5	Horticulture	(423) 3
Survey of Agriculture	(401) 1	Military or Air Science	2	Botany	(419) 5
Military or Air Science	2	Physical Education	(402) 1	Physical Education	(403) 1
Physical Education	(401) 1	Physical Education	(400) 1	Military or Air Science	2

SECOND YEAR

Chemistry	(411) 5	Economics	(406) 5	Agronomy	(501) 4
Entomology	(550) 5	Chemistry	(412) 5	Agr. Biochemistry	(410) 3
Zoology	(401) 5	Horticulture	(522) 5	Agr. Biochemistry	(411) 3
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
				Elective (a)	5

(a) Bacteriology, or Geology, or Mathematics, or Physics.

THIRD YEAR

Botany	(605) 5	Botany	(606) 5	Horticulture	(511) 3
Horticulture	(503) 5	Horticulture	(504) 5	Horticulture	(622) 5
Bacteriology	(607) 5	Elective (a)	5	Zoology	(403) 5
				Elective	5

(a) Political Science (401) or Sociology (401).

FOURTH YEAR

Horticulture	(513) 5	Horticulture	(526) 5	Agr. Economics	(628) 5
Horticulture	(621) 3	Elective	13	Elective	13
Entomology	(566) 5				
Elective	5				

Social Science and Humanities: A student following this curriculum, in addition to the fixed subjects in the above outline, is required to select a minimum of twenty hours from at least three of the following areas:

Business Organization	Geography	Political Science
Economics	History	Psychology
English	Journalism	Sociology
Fine Arts	Music	Speech
Foreign Language	Philosophy	

Technical Courses: Additional elective hours may be chosen from the following departmental areas:

Agricultural Biochemistry
Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Botany and Plant Pathology
Conservation
Dairy Science
Dairy Technology
Geology
Horticulture and Forestry
Mathematics
Photography
Physics
Poultry Science
Zoology and Entomology

HORTICULTURAL PRODUCTS

The Horticultural Products curriculum offers instruction in commercial canning, freezing, dehydration, fermentation, and other methods of preserving fruits and vegetables, as well as techniques employed in quality evaluation, quality analysis and quality control. Positions available upon graduation include factory managers, quality control managers, quality control technologists, food and drug and processed food inspectors, salesmen, research, teaching and extension specialists.

FIRST YEAR

Botany	(401) 5	Botany	(402) 5	Horticulture	(423) 3
English	(416) 3	English	(417) 3	English	(418) 3
Horticulture	(402) 5	Horticulture	(403) 5	Zoology	(401) 5
Survey of Agriculture	(401) 1	Military or Air Science	2	Elective	3–5
Military or Air Science	2	Physical Education	(402) 1	Military or Air Science	2
Physical Education	(401) 1	Physical Education	(400) 1	Physical Education	(403) 1

SECOND YEAR

Agr. Economics	(420) 5	Horticulture	(522) 5	Economics	(406) 5
Chemistry	(411) 5	Horticulture	(524) 5	Animal Science	(509) 5
Zoology	(408) 5	Military or Air Science	2	Agr. Biochemistry	(410) 3
Military or Air Science	2	Chemistry	(412) 5	Agr. Biochemistry	(411) 3
Elective	3			Military or Air Science	2

THIRD YEAR

Bacteriology	(607) 5	Agr. Biochemistry	(601) 3	Bacteriology	(636) 3
Poultry Science	(618) 3	Agr. Biochemistry	(609) 3	Bacteriology	(637) 3
Horticulture	(503) 5	Horticulture	(629) 5	Agronomy	(501) 4
Elective	5	Elective(a)	5	Elective	5

(a) Political Science (401) or Sociology (401).

Horticulture (631) 5 hours must be and Horticulture (710) 2 hours may be taken during the Summer Quarter following the Junior Year.

FOURTH YEAR

Horticulture	(624) 5	Agr. Biochemistry	(718) 5	Elective	12
Horticulture	(710) 2	Horticulture	(710) 2	Horticulture	(710) 2
Elective	10	Elective	10		

Social Sciences and Humanities: A student following this curriculum in addition to the fixed subjects in the above outline, is required to select a minimum of twenty hours from at least three of the following areas:

Business Organization
Economics
English
Fine Arts
Foreign Languages
Geography
Geology
History
Journalism
Music
Philosophy
Political Science
Psychology
Sociology
Speech

Technical Courses: Additional elective hours may be chosen from the following departmental areas:

Agricultural Biochemistry
Agricultural Economics and Rural Sociology
Agricultural Education
Agricultural Engineering
Agronomy
Animal Science
Bacteriology
Botany and Plant Pathology
Chemical Engineering
Conservation
Dairy Science
Dairy Technology
Geology
Horticulture and Forestry
Mathematics
Photography
Physics
Poultry Science
Zoology and Entomology

NUTRITION

This curriculum is designed for the students who wish to prepare for professional careers in nutrition. Provision has been made for a broad training in the fundamental biological and physical sciences to serve as a foundation for graduate study.

The departments in which major study may be carried on are: School of Home Economics, Agricultural Biochemistry, Animal Science, Dairy Science, and Poultry Science.

This curriculum requires 208 hours for graduation.

The following program of *required courses* was designed to provide the minimum training for a degree of Bachelor of Science in Nutrition.

FIRST YEAR

Chemistry	(411) 5	Chemistry	(412) 5	Chemistry	(413) 5
Mathematics	(416 or 421) 5	Mathematics	(417 or 422) 5	Elective	8
Botany or Zoology	(401) 5	Botany or Zoology	(402) 5		
For Men		**For Men**		**For Men**	
Survey of Agriculture	(401) 1	Physical Education	(400) 1	Physical Education	(403) 1
Physical Education	(401) 1	Physical Education	(402) 1	Military or Air Science	2
Military or Air Science	2	Military or Air Science	2		
For Women		**For Women**		**For Women**	
Home Economics	(400) 2	Physical Education	(400) 1	Physical Education	(423) 1
Physical Education	(421) 1	Physical Education	(422) 1	Elective	2
Elective	1	Elective	2		

SECOND YEAR

Chemistry	(421) 4	Chemistry	(422) 3	Chemistry	(423) 3
Physics	(411) 5	Physics	(412) 5	Physics	(413) 5
English	(416) 3	Economics	(402) 5	Elective	3
Economics	(401) 5	English	(417) 3	English	(418) 3
For Men		**For Men**		**For Men**	
Military or Air Science	2	Military or Air Science	2	Military or Air Science	2
For Women		**For Women**		**For Women**	
Physical Education	(425) 1	Physical Education	(426) 1	Physical Education	(427) 1
Elective	1	Elective	1	Elective	1

THIRD YEAR

Chemistry	(647) 3	Chemistry	(648) 3	Bacteriology	(607) 5
Chemistry	(649) 3	Chemistry	(650) 3	Physiology	(507) 5
Elective	10	Physiology	(506) 5	or	
		or		Veterinary Physiology	(417) 5
		Veterinary Physiology	(416) 5	Agr. Economics	(616) 3
		Elective	5	Elective	3

FOURTH YEAR

Agr. Biochemistry	(601) 3	Agr. Biochemistry	(707) 5	Elective	15
Agr. Biochemistry	(609) 3	Elective	13		
Zoology	(630) 5				
Elective	9				

ELECTIVES

Technical. A minimum of 30 hours of technical electives to be chosen from at least three of the following departments:

Accounting 401,and 402
Agricultural Biochemistry 512, 713
Agricultural Economics 420
Agronomy 501, 510, 511, 520
Anatomy 613, 616, 619
Animal Science 401, 402, 503, 509
Bacteriology 636, 637
Botany 401, 402, 605, 606
Chemistry 670, 681, 682, 691, 692, 693, 741
Dairy Science 401, 502, 512, 610, 714
Geology 401, 402
Home Economics 440, 441, 551, 610, 612, 616, 700
Horticulture 403, 423, 629
Mathematics 440, 541, 542
Photography 511, 615
Poultry Science 401, 409, 417, 618
Zoology 401, 402, 403, 412

Broadening. A student following this curriculum shall take, in addition to the required courses listed above, 25 hours from at least three of the following departments or areas. Courses listed in Group 1 cannot be used to meet requirements of Group 2.

Business Organization
Economics
English
Fine and Applied Arts
Foreign Language
Geography
History
Journalism
Music
Philosophy
Physiology (Human)
Political Science
Psychology
Rural Sociology 505
Sociology
Speech

PLANT SCIENCE

This curriculum offers preparation for teaching or research positions in certain plant science fields. It is advisable for students following this curriculum to continue with at least one year of graduate work. The departments in which the major study may be carried on are Agricultural Biochemistry, Agronomy, and Botany. Some of the fields of specialization toward which a student may point his training are: plant chemistry, soil chemistry, soil physics, soil biology, field crops, plant physiology, plant pathology, plant breeding, plant ecology, plant morphology, mycology, and algology.

The following program of *required courses* was designed to provide the minimum training for a degree Bachelor of Science in Agriculture.

This curriculum requires 208 hours for graduation.

FIRST YEAR

Botany	(401)	5	Botany	(402)	5	Zoology	(401)	5
Chemistry	(411)	5	Chemistry	(412)	5	Agr. Biochemistry	(410)	3
Mathematics	(416 or 421)	5	Mathematics	(417 or 422)	5	Agr. Biochemistry	(411)	3
Military or Air Science		2	English	(416)	3	English	(417)	3
Physical Education	(400)	1	Military or Air Science		2	Elective		5
Physical Education	(401)	1	Physical Education	(402)	1	Military or Air Science		2
Survey of Agriculture	(401)	1				Physical Education	(403)	1

SECOND YEAR

Physics	(411 or 431)	5	Physics	(412 or 432)	5	Elective		10 to 18
English	(418)	3	Elective		5 to 8	Economics	(406)	5
Zoology	(402 or 403)	5	Agr. Economics	(420)	5	Military or Air Science		2
Elective		5	Military or Air Science		2			
Military or Air Science		2						

Electives for the first and second years must be chosen from among the following courses: Botany 406, 419, Zoology 402, 403, Chemistry 413, Geology 401, 451, Mathematics 440, 541, 543, Physics 413 or 433, or Social Science.

THIRD YEAR

Agronomy	(501) 4	Elective	15 to 20	Elective	15 to 20
Elective	10 to 15				

Electives for the third and fourth years must be chosen from the field of specialization and from the technical Agricultural courses in the departments listed on page 39. It is recommended that one foreign language be elected during the third and fourth years.

POULTRY SCIENCE

The poultry scientist engages in research, extension, teaching or management work in relation to egg and poultry meat production. His work may deal with flock management; selection and breeding; effects of heredity and environment on hatchability; nutritional requirements of various types; improved methods of feeding; rearing and housing; and disease prevention and control. He is interested in the economics of production, quality egg production and the marketing of poultry products.

He may do testing and inspection work to insure compliance with local and state laws; he may act as salesman or adviser to feed companies; or he may grade poultry products sold on the market. He may own or manage a poultry farm or hatchery.

This curriculum requires 206 hours for graduation.

The following *suggested program* of courses is recommended by the Department of Poultry Science.

Satisfactory completion of these courses and the minimum group requirements on pages 42 and 43, and enough additional hours to meet the requirements for graduation will lead to the degree Bachelor of Science in Agriculture.

FIRST YEAR

Zoology	(401) 5	Chemistry	(411) 5	Chemistry	(412) 5
Poultry Science	(401) 5	Zoology	(402) 5	Zoology	(403) 5
Survey of Agriculture	(401) 1	Poultry Science	(410) 3	Poultry Science	(409) 3
Military or Air Science	2	English	(416) 3	English	(417) 3
Physical Education	(401) 1	Military or Air Science	2	Military or Air Science	2
Elective	5	Physical Education	(402) 1	Physical Education	(408) 1
		Physical Education	(400) 1		

SECOND YEAR

Agr. Economics	(420) 5	Economics	(406) 5	Political Science	(401)
Agr. Biochemistry	(410) 3	Poultry Science	(420) 3	or	5
Poultry Science	(416) 3	Mathematics	(416 or 421) 5	Rural Sociology	(505)
English	(418) 3	Military or Air Science	2	Poultry Science	(417) 3
Military or Air Science	2	Elective	3	Mathematics	(417 or 422) 5
				Agronomy	(501) 4
				Military or Air Science	2

THIRD YEAR

Poultry Science	(618) 3	Poultry Science	(413) 5	Elective	15
Bacteriology	(607)	Business Organization	(504) 3		
or	5	Elective	7		
Physics	(411)				
Botany	(401) 5				
Elective	5				

FOURTH YEAR

Poultry Science	(620) 3	Poultry Science	(750) 1	Poultry Science	(615) 5
Journalism	(508) 3	Elective	14	Poultry Science	(750) 1
Poultry Science	(750) 1			Elective	10
Elective	10				

AGRICULTURE—VETERINARY MEDICINE

Because of the large number of candidates for admision, only those students whose pre-veterinary medical work in college is of superior quality can expect to be admitted to a veterinary medical school.

For the same reason, many applicants cannot be admitted at the end of the second year in college, but must spend another year before being admitted.

The Agriculture-Veterinary Medicine Combination Curriculum enables an applicant for admission to the veterinary medical school, who has completed the two year of specific course requirements listed below, to select major courses required for a Bachelor of Science degree.

It is necessary for the entering student to include the following courses in Agriculture-Veterinary Medicine Curriculum, then choose his major with the advice of a college counselor.

Survey of Agriculture..... 1 hour
English (Composition and Reading)..... 9 hours
Chemistry 411, 412, 413.....15 hours
Agricultural Biochemistry 410, 411..... 6 hours
Zoology 401, 402, 403.....15 hours
Mathematics 416, 417 and/or
Physics 411, 412.....10 hours

Humanities and Social Sciences.....20 hours
Animal Science .....
Dairy Science..... } .....15 hours
Poultry Science.....

91 hours

A student in the combination curriculum who has completed the requirements for the Bachelor of Science degree in Agriculture as listed on pages 42 and 43 will be eligible for the Bachelor of Science degree on the completion of the first year's work in the College of Veterinary Medicine provided:

(A) He has been registered in the College of Agriculture of The Ohio State University for at least three Quarters (45 credit hours) before registration in the College of Veterinary Medicine.

(B) He registers in both the College of Agriculture and the College of Veterinary Medicine for the fourth year's work.

The following program of courses is especially designed for the student desiring to complete the requirements for admission to the College of Veterinary Medicine as well as the requirements for the Bachelor of Science degree in Agriculture.

FIRST YEAR

Survey of Agriculture	(401) 1	Chemistry	(412) 5	English	(415) 3
Chemistry	(411) 5	Zoology	(402) 5	Chemistry	(413) 5
Zoology	(401) 5	Animal Science (401) or		Zoology	(403) 5
Animal Science (401) or		Dairy Science (401)	5	Social Science Elective	5
Dairy Science (401)	5	Physical Education	(402) 1	Physical Education	(403) 1
Physical Education	(401) 1	Physical Education	(400) 1	Military or Air Science	2
Military or Air Science	2	Military or Air Science	2		

SECOND YEAR

English	(417) 3	English	(418) 3	Agr. Economics	(420) 5
Agr. Biochemistry	(410) 3	Animal Science	(402) 5	Social Science or	
Agr. Biochemistry	(411) 3	Mathematics	(417) 5	Humanities Electives	10
Mathematics	(416) 5	or		Military or Air Science	2
or		Physics	(412 or 418) 5		
Physics	(411) 5	Military or Air Science	2		
Military or Air Science	2	Elective	5		

THIRD YEAR

Botany	(401) 5	Major in Agriculture	5	Major in Agriculture	5
Agronomy	(501) 4	Social Science or		Social Science or	
Poultry Science	(401) 5	Humanities	10	Humanities	5
Major in Agriculture	5	Elective in Agriculture	3-5	Elective in Agriculture	8-10

FOURTH YEAR

The student must register in the College of Veterinary Medicine and in the College of Agriculture.

SPECIAL PROGRAMS in the COLLEGE OF AGRICULTURE

Students with only a limited amount of time for college work, who wish to concentrate on agricultural courses for a few Quarters, may be permitted to enroll in a Special Program. These students must, however, clearly state, in writing, their reasons for electing the program and they must indicate their awareness of the consequence should they later decide to change to a degree program.

Students in a Special Program in Agriculture may, in so far as they are qualified, elect courses in any department in the University, including courses not listed in this Bulletin.

Course Prerequisites

A student who cannot meet the prerequisites for certain desired courses may, upon the approval of his advisor and instructor in charge, be permitted to take the course without credit as an auditor. Courses numbered 500 to 599 are not open for election for credit in the first year and courses numbered 600 to 699 are not open for election for credit in the first or second year.

Guidance

All guidance facilities of the University are available to the students in Special Programs in Agriculture. A student desiring to enroll in the Special Program in Agriculture should contact the College Office prior to registration. The Dean's Office will advise the student until he selects his faculty advisor, which must precede registration for the second Quarter.

Admission Requirements

The requirements for admission to a Special Program in Agriculture are the same as for existing four-year curricula in the College of Agriculture. (See page 42). Students admitted for Special Programs in Agriculture are tested along with students in degree curricula for proficiency in pre-college English and pre-college mathematics, and those whose preparation is found inadequate will be required to enroll in the appropriate remedial courses, English 400 and Mathematics 409. Such enrollment, however, may be omitted if the courses elected do not otherwise require such prerequisite work and so long as the Special enrollment of the student does not exceed three Quarters time. Thereafter the remedial work is immediately required to permit continued registration.

Registration

The prospective student should contact the College of Agriculture office in Townshend Hall, regarding his course of study.

A student may enroll at The Ohio State University for one or more Quarters of the year. The Quarters begin the last week of September, the first week of January, last week of March and the middle of June and continue for a period of approximately eleven weeks each. It is possible for a student to enroll for any one of the Quarters and regulate future enrollment to suit his convenience and the program selected. All men students are required to meet the University's fixed requirements in Military Science and Physical Education unless exempted. For possible exemptions, see page 10.

Transfer in Programs

A student may, with the approval of his adviser, transfer from a Special Program in Agriculture to any of the existing four-year curricula in Agriculture with the understanding that he must meet all the requirements of the curriculum which he elects.

A student may be permitted to transfer from any one of the existing curricula in the College of Agriculture to a Special Program in Agriculture upon the approval of his adviser.

Completion of Special Program in Agriculture

Upon satisfactory completion of at least three Quarters of a Special Program in Agriculture the student shall be granted an appropriate certificate.

General Rules and Regulations

The regular rules and regulations of the College of Agriculture and of the University shall apply to students enrolled in Special Programs in Agriculture except as otherwise specifically stated.

IX. DEPARTMENTS OF INSTRUCTION

ACCOUNTING
Office, 452 Hagerty Hall

PROFESSORS McCOY, TAYLOR, ECKLEBERRY, AND DICKERSON, ASSOCIATE PROFESSORS SHONTING, BURNHAM, JENCKS, DOMIGAN, COX, FERTIG, AND NOBLE, ASSISTANT PROFESSOR BRUSH, MR. BOLON, MR. HAMPTON, MR. LYLE, MR. GRIMSTAD, MR. NEUBIG, MR. SERRAINO, MR. SLOCUM, AND ASSISTANTS

401-402. Elements of Accounting. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Three class meetings and two two-hour laboratory periods each week. Prerequisite or concurrent, Economics 401-402 or 403-404 or 406 or 507. All instructors.

The work of the first Quarter includes the development of the basic principles underlying bookkeeping procedures; discussion of the techniques and records employed in the recording, classification, and summarization of simple business transactions; a treatment of the methods involved in closing the accounting records, including the accountant's work sheet, and preparation of the financial statements; and an introduction to the analysis and interpretation of these statements.

The work of the second Quarter develops the application of the above principles and techniques to the partnership and corporate forms of organization. Manufacturing statements, the voucher system, and problems arising in connection with accounting for cash and commercial paper.

403. Intermediate Accounting. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Accounting 401-402. All instructors.

A study of the fundamental accounting principles of valuation and their implications in the preparation of the Balance Sheet and the Income Statement. Special consideration is given to problems in connection with cash, receivable, inventories, investments, fixed assets, liabilities, capital stock, and surplus.

405. Outline of Accounting. Five credit hours. One Quarter. Autumn and Winter. Five class meetings each week. Mr. Grimstad.

A general survey of the principles of accounting and their application in modern business. Points emphasized are: use of accounting for information and control; the double-entry theory and the mechanics of bookkeeping; account classification; determination of profits; problems of valuation; presentation and analysis of financial and operating statements. The course is intended for students whose major interest is in fields other than accounting; it will serve, however, as presentation for a limited amount of specialized study in the problems of mercantile, manufacturing, and institutional accounting.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

603-604. Cost Accounting. Four credit hours. Two Quarters. 603, Autumn and Winter; 604, Winter and Spring. Four class meetings each week. Prerequisite, Accounting 403. Not open to students taking Accounting 624. Mr. Cox, Mr. Brush, Mr. Noble.

Basic concepts and techniques in industrial accounting to provide data and analyses for cost control and measure costs of operations and products. Historical and standard costs as applied to job order and process industries. Problems and case studies dealing with managerial use of cost accounting information.

Not available for graduate credit for students majoring in Accounting.

616. Financial Statement Analysis. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Accounting 403. Mr. Bolon.

A study of the flow or movement of funds as reflected in the financial statements. The use of ratios and other indices in the analysis and interpretation of the financial position, together with the trends and variations therein, are considered in detail. The subject matter is developed through lectures and problems supplemented with published financial statements. Each student prepares, under supervision of the instructor, an analysis of the current financial statements of some prominent corporation, together with a comparison with the principal competitors in the field.

Not available for graduate credit for students majoring in Accounting.

624. Factory Costs. Five credit hours. One Quarter. Winter and Spring. Five class meetings each week. Prerequisite, Accounting 401-402 or 405. Not open to students taking Accounting 603-604. Mr. Cox, Mr. Brush.

This course is intended primarily for students whose major interest is in fields other than accounting. The methods of accumulating material, labor, and expense costs for job order and process of cost accounting are studied. Joint and by-product costs as well as standard costs are considered. The place and value of cost reports and the relationship of the cost department to other business departments are discussed.

AGRICULTURAL BIOCHEMISTRY

Office, 101 Agricultural Laboratories Building

PROFESSORS DEATHERAGE, ALMY, BURRELL, AND LYMAN (EMERITUS), ASSOCIATE PROFESSORS MOORE, VARNER, AND WEBSTER, AND ASSISTANTS

"400" and "500" courses in agricultural biochemistry are not designed to support major work in agricultural biochemistry. Students interested in majoring in agricultural biochemistry are requested to interview the Department Chairman concerning election of courses in this and related departments.

410. Introduction to Agricultural Biochemistry. Three credit hours. One Quarter. Autumn, Winter, Spring. Three lectures each week. Prerequisite, Chemistry 412. All instructors.

An introductory course in agricultural biochemistry and its application to plant and animal life.

411. Introduction to Agricultural Biochemistry: Laboratory. Three credit hours. One Quarter. Autumn, Winter, Spring. Two one-hour lecture discussion periods and two two-hour laboratory periods each week. Prerequisite or concurrent, Agricultural Biochemistry 410. Mr. Almy and assistants.

Labortory work to accompany Agricultural Biochemistry 410.

501. Dairy Chemistry. Three credit hours. Autumn Quarter. Three lecture and discussion periods each week. Prerequisite, Agricultural Biochemistry 410 and 411 or equivalent. Mr. Almy.

The chemistry of the lipids, proteins, sugars, enzymes, vitamins, and mineral substances found in milk and dairy products. Some of the physico-chemical properties of milk constituents are also studied.

502. Dairy Chemistry. Three credit hours. Autumn Quarter. One laboratory-lecture period and two four-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 410 and 411 or equivalent. To be taken concurrently with Agricultural Biochemistry 501. Mr. Almy.

Laboratory work in the isolation of the major constituents of milk and study of their chemical properties. Some physico chemical effects of processing procedures will also be considered.

506. General Agricultural Biochemistry. Three credit hours. One Quarter. Autumn, Winter, Spring. Three lectures each week. Prerequisite, Agricultural Biochemistry 410. All instructors.

A fundamental course in modern agricultural biochemistry.

507. General Agricultural Biochemistry: Laboratory. Three credit hours. One Quarter. Autumn, Winter, Spring. Two one-hour lectures and two two-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 411, and previous or concurrent Agricultural Biochemistry 506. All Instructors.

Laboratory work to accompany Agricultural Biochemistry 506.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. General Agricultural Biochemistry. Three credit hours. One Quarter. Autumn, Winter, Spring. Three lectures each week. Prerequisite, Agricultural Biochemistry 410. All Instructors.

A fundamental course in modern agricultural biochemistry, including an introduction to current biochemical literature.

Not open for graduate credit to students majoring in agricultural biochemistry.

609. General Agricultural Biochemistry: Laboratory. Three credit hours. One Quarter. Autumn, Winter, Spring. Two one-hour lectures and two two-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 411, and previous or concurrent Agricultural Biochemistry 601. All Instrctors.

Laboratory work to accompany Agricultural Biochemistry 601.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, consent of the instructor. All instructors.

Students electing this course must have had at least two five-hour courses in the department. Consent of the department must be secured.

707. Nutrition and Introduction to Intermediary Metabolism. Five credit hours. Winter Quarter. Three lectures and two three-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 601 and 609 or equivalent and acceptable courses in physiology or equivalent. Mr. Moore.

The concepts leading to the science of nutrition and the nature and function of essential nutrients.

Not open to students who have credit for Agricultural Biochemistry 607.

713. Chemistry of Foods and Food Processing. Five credit hours. Winter Quarter. Three lectures and two three-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 601 and 609 or equivalent. It is recommended that the student have or take concurrently Chemistry 647-648, 680 or 681. Mr. Deatherage.

Lectures cover the chemical, physical, and biological nature of foods in relation to handling, processing, packaging, quality, and consumer acceptance. Laboratory will consist of selected experiments covering the functions of various food constituents, chemical and physical changes during cooking and processing, and elements of consumer acceptance in relation to food chemistry and technology.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Office, 103 Agricultural Administration Building

PROFESSORS SMITH, CRAY, FALCONER (EMERITUS), HENNING, MANGUS, MILLER, OYLER, SHERMAN, SITTERLEY, TOM (EMERITUS), AND WERTZ, ASSOCIATE PROFESSORS BAKER, BAUMER, CAPENER, CRAVENS, DIMIT, MOORE, NEWBERG, AND OLSON, ASSISTANT PROFESSORS ANDREWS, McCORMICK, SHARP, SHAUDYS, WAYT, AND WILLIAMS, MR. BAILEY, MR. POLLOCK, AND ASSISTANTS

(For curriculum in Agricultural Economics and Rural Sociology, see page 47.)

AGRICULTURAL ECONOMICS

420. Economic Trends in Agriculture. Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures and three discussion periods each week. Mr. Wertz, Mr. McCormick, Mr. Pollock, Mr. Wayt and assistants.

An introductory course to acquaint the student in agriculture with the major economic trends in his field, such as production, consumption, and foreign trade in farm products, farm size, farm income, prices, and the use of credit.

502. Farm Management. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and one three-hour laboratory period each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Sitterley, Mr. Bailey, Mr. Shawdys.

Lectures, class discussion, and laboratory work on problems of farm management with special reference to the economic and management principles involved in the organization, operation, and administration of the individual farm.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

602. Advanced Farm Organization. Five credit hours. Autumn Quarter. Three lectures each week, student conferences, laboratory periods and one-day field trip to be arranged in connection with the student's farm organization problem. Prerequisite, Agricultural Economics 502. Mr. Sitterley.

A detailed analysis of the economic and management principles involved in organizing, operating and administering farms.

603. Cooperation in Agriculture. Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Henning.

Basic principles of agricultural cooperation for both marketing and purchasing associations, including types of organizations, legal aspects, membership relations, financing, organizational and intercooperative problems, and distribution of savings.

605. Agricultural Policy. Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Smith, Mr. McCormick.

The importance of the agricultural industry to the welfare of the nation. Some characteristics of the farming industry. Foreign competition, present and prospective. State and federal regulation, encouragement, and aid to agriculture in the United States and foreign countries.

608. Livestock Marketing (also Animal Science 608). Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Animal Science 402 and Agricultural Economics 613. Mr. Henning.

Selling methods, basis of sale, agencies involved, organization of markets, transportation, financing, market location, marketing costs, prices, when to market, grade differentials, direct marketing, government regulation, recent developments will be studied.

610. Agricultural Finance. Three credit hours. Autumn Quarter. Three discussion periods each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Wertz, Mr. Bailey.

The financial program of the individual farm. Credit needs of agriculture, sources of credit, interest rates, length of loans, repayment terms, and farm investment problems. A one-day field trip is required.

612. Prices of Farm Products. Three credit hours. One Quarter. Winter and Spring. Three lectures each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Wertz.

Prices received and paid by farmers, characteristics of farm product prices, index numbers, parity price, feeding ratios and other purchasing ratios, seasonal variation of farm product prices, livestock cycles, demand elasticity, and the influence of the general price level on the price of farm products.

613. Marketing Farm Products. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lectures each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Henning, Mr. Baumer, Mr. Pollock. Mr. Sharp.

A study of local, wholesale, and retail marketing agencies and of the principles involved in the marketing of farm products. A two-day field trip is required.

614. Business Management in Agricultural Marketing. Three credit hours. Spring Quarter. Two lectures and one laboratory period each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Henning.

A detailed study of representative agricultural marketing agencies including their problems of administration, finance, employees, financial statements, selling, purchasing, warehousing, and transportation.

615. Land Economics. Three credit hours. Spring Quarter. Prerequisite, Agricultural Economics 420 and Economics 402 or 406, and senior standing. Mr. Sitterley.

Our rural land resources and requirements, the economic principles involved in land use, our major land use problems, a consideration of ways of achieving a better land use, and the public's interest in a land policy.

616. Food Economics. Three credit hours. Spring Quarter. Three lectures each week. Prerequisite, Economics 402 or 404 or 406. Mr. Sherman.

Economic aspects of the production, distribution, and consumption of food.

618. Farm Appraisal. Three credit hours. Spring Quarter. Three lectures each week and field trips. Prerequisite, Agricultural Economics 502. Mr. Baker.

Methods of appraising farm property. Forces which affect farm real estate values.

620. Marketing Poultry Products (also Poultry Science 620). Three credit hours. Winter Quarter. Prerequisite, Poultry Science 401, ten hours of economics or agricultural economics. Mr. Cray.

Functions of marketing agencies and relation to marketing costs. Types and location of markets with respect to production. Function of storage, market reporting, and marketing controls. Marketing poultry products as related to the consumer.

626. Marketing of Dairy Products (also Dairy Science 626). Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Agricultural Economics 613. Mr. Baumer.

A study of the principles of assembling, transporting, selling, pricing, distribution, marketing costs, and margins for dairy products.

628. The Marketing of Fruits and Vegetables. Five credit hours. Spring Quarter. Three lecture periods and the equivalent of one four-hour laboratory period each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Cravens.

Special emphasis is given to the principles involved in the marketing of fruits and vegetables and the agencies concerned. One full day and at least two one-half day field trips are taken to acquaint students with the various marketing agencies handling fruits and vegetables.

Not open to students who have credit for Horticulture 628.

633. Grain Marketing. Three credit hours. Autumn Quarter. Three class periods each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406. Mr. Sharp.

Principles and practices involved in grain marketing and the theory of grain pricing. Economic analysis of futures pricing and trading, hedging, market grades, grade differentials, discounts, and basis of sale. Economics of storage, current development and trends affecting grain marketing.

650. Foreign Agricultural Development. Three credit hours. Spring Quarter. Three class periods each week. Prerequisite, Agricultural Economics 420 and Economics 402 or 406, or the equivalent with permission of the instructor. Mr. Smith.

Analysis of agricultural organization, production, and marketing in selected areas of the world. Foreign agricultural policies and international competition in agriculture. Appraisal of foreign technical assistance programs in agriculture.

RURAL SOCIOLOGY

505. Introduction to Rural Sociology. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, sophomore standing. Mr. Mangus, Mr. Andrews, Mr. Oyler.

Principles and practices of living in contemporary rural society. Emphasizes urbanizing influences, personality adjustment, marriage and family living, occupational adjustment, educational problems, and group participation and leadership.

Students who have credit for Sociology 401, 507, or 511 should elect Rural Sociology 606 in place of this course.

506. Rural Leadership. Three credit hours. Spring Quarter. Two lectures and one laboratory period each week. Mr. Dimit.

Basic principles and practices in the development of effective leadership in rural organization programs.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

606. Advanced Rural Sociology. Five credit hours. One Quarter. Autumn and Winter. Prerequisites, five hours of sociology, rural sociology or the equivalent with permission of the instructor. Mr. Mangus.

A general course in the society of rural life. Emphasizes the fundamental and conditioning factors in rural social development, rural social institutions, and the nature of rural social organization.

609. Rural Social Organization. Three credit hours. Autumn Quarter. Two class periods and one two-hour laboratory each week. Prerequisite, five hours of Sociology or Rural Sociology, or the equivalent with permission of the instructor. Mr. Andrews.

The structure and function of rural groups, including organizational and informal relationships. The process of making decisions and policy for community development through agricultural extension, school systems, churches and other agencies. Students will make an analysis of a rural organization or community.

***611. Rural Youth Social Adjustment.** Four credit hours. Autumn Quarter. Prerequisite, five hours of sociology, rural sociology or the equivalent with permission of the instructor. Mr. Mangus.

Personal and social adjustment problems of rural young people in achieving moral, marital, and economic maturity.

SPECIAL PROBLEMS

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, at least eight hours of work in the department and the consent of the instructor. The staff.

This course is for students who desire to work out special problems in the field of agricultural economics and rural sociology.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL EDUCATION

Office, 100 Rehearsal Hall

PROFESSORS BENDER, ROBINSON, STEWART (EMERITUS), WOOD, AND WOODIN, ASSOCIATE PROFESSORS KIRBY AND WOLF, ASSISTANT PROFESSOR RITCHIE, MR. DAVIS, MR. WILSON

456. Introduction to Agricultural Education. Three credit hours. One Quarter. Autumn, Winter, Spring. Three discussion periods each week. Mr. Wolf.

The importance and purpose of education in agriculture with emphasis upon nature of programs, opportunities available, and qualifications of personnel.

Not open to students who have credit for Agricultural Education 500.

* Not given in 1957-1958.

501. Methods in Teaching Vocational Agriculture. Five credit hours. One Quarter. Autumn, Winter, Spring. Four discussions and one observation period each week. Prerequisite, Agricultural Education 456. Mr. Wolf.

The learning process and its application to teaching; factors in successful teaching in vocational agriculture. Field trips to observe schools with special attention to vocational departments.

504-505-506. Student Teaching in Vocational Agriculture. Five credit hours each. Courses taken concurrently. Autumn, Winter, and Spring Quarters. Teaching experience in a selected school community with full time devoted to these courses. Prerequisite, Agricultural Education 501 and admission to advanced standing. Mr. Ritchie, Mr. Wilson, Mr. Davis.

Guided observation and participation in the professional responsibilities of a teacher of vocational agriculture on a level appropriate to the student's training and experience, including an intensive study of the problems encountered and the competencies developed.

526. Principles in Extension Program Development. Three credit hours. One Quarter. Autumn and Spring. Three discussion periods each week. Mr. Kirby.

Objectives and procedures in developing extension programs in agriculture, home economics and youth with emphasis on program determination, teaching methods, and relationships to other groups.

Not open to students who have credit for Agricultural Extension 501.

550. Experience in Agricultural Education. Two to five credit hours. Autumn, Winter, and Spring Quarters. This course may be repeated for a maximum of ten credit hours. Prerequisite, permission of the instructor. Mr. Ritchie and staff.

A period of practical experience in an area of agricultural education approved by the adviser. Written reports of the experience are required.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

611. Teaching Aids for Agricultural Education. Three credit hours. Spring Quarter. Two discussion periods and one laboratory each week. Mr. Woodin.

The selection of teaching equipment and materials as well as demonstrations and practice in their use in a program of agricultural education.

624-625-626. Apprenticeship in Agricultural Education. Five credit hours each. Courses taken concurrently. Autumn, Winter, Spring. Experience in a selected county and school community with full time devoted to these courses. Prerequisite, Agricultural Education 504, 505, 506, and permission of the instructor. Mr. Kirby, Mr. Ritchie, Mr. Woodin.

Guided participation in vocational agriculture, agricultural extension, and other programs in agricultural education for the purpose of developing further competency in teaching present and prospective farmers.

Not open to students who have credit for Agricultural Education 692, 593, 594.

Not open for graduate credit.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. Staff.

Planning, conducting, and reporting a special problem in agricultural education appropriate to the needs of the student.

705. Farming Programs. Three credit hours. Autumn Quarter. Three discussion periods each week. Prerequisite, experience in agricultural education. Mr. Woodin.

Principles and procedures used in selecting, planning, conducting and evaluating farming programs as related to teaching-learning situations.

***707-†708-*709. Curriculum in Vocational Agriculture.** Four credit hours each. First term, Summer Quarter. Four two-hour discussion-laboratory periods each week. Prerequisite, teaching experience in vocational agriculture or permission of the instructor. Mr. Wolf.

The principles and practices in the development of programs of instruction for various classes in vocational agriculture adapted to local interests and needs. Each course, which is an independent unit, gives emphasis to selection of subject matter content and teaching procedures.

*707. Teaching Crop and Livestock Production.

†708. Teaching of Farm and Mechanics.

*709. Teaching Agricultural Economics and Farm Management.

712. Future Farmers of America. Three credit hours. Spring Quarter. Three discussion periods each week. Prerequisite, teaching experience in vocational agriculture or permission of the instructor. Mr. Bender.

An analysis of the Future Farmers of America organization in terms of its contribution to the education of farm boys with special consideration of the problems in planning and conducting local programs.

Not open to students who have credit for Agricultural Education 612.

715. Adult Education in Agriculture. Three credit hours. Autumn Quarter. Three discussion periods each week. Prerequisite, experience in agricultural education. Mr. Bender.

Principles and practices appropriate to the solution of problems encountered in developing and conducting instructional programs for young and adult farmers.

Not open to students who have credit for Agricultural Education 808.

799. Workshop in Agricultural Education. Four credit hours for three week workshop. Full time of students required, therefore registrants not permitted to take other University work concurrently. Permission of the instructor is required.

799A. Workshop—Program Planning in Agricultural Extension. Four credit hours. Winter Quarter. Open only to persons employed or about to be employed as Extension Workers. Mr. Wood, Mr. Robinson, Mr. Kirby.

Principles and methods involved in the formulation of policies and problems in various aspects of agricultural and home economics extension.

†799B. Workshop—Program Planning in Vocational Agriculture. Four credit hours. May be repeated for a maximum of eight credit hours. Summer Quarter. Open only to persons empolyed or about to be employed as teachers of vocational agriculture. Mr. Woodlin.

Objectives and methods of local program planning applied to those areas of need as expressed by the teachers. Special attention will be devoted to the appraisal of student needs and the use of community resources.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL ENGINEERING
Office, 105 Ives Hall

PROFESSORS MILLER, SCHWAB, AND BARDEN, ASSOCIATE PROFESSOR JOHNSON, ASSISTANT PROFESSOR LAMP, MR. WARNER, MR. HARKNESS, MR. HUBER

401. Field Machinery. Five credit hours. One Quarter. Autumn, Winter, Spring. Three one-hour recitations and two two-hour laboratory periods each week. The staff.

Viewpoint and scope of agricultural engineering in the business of farming and in farm living. Practice in identification and control of physical principles, and in systematic approach to and analysis of common practical problems as illustrated in the use, adjustment and management of common field machines, and in machinery programs.

Not open to Agricultural Education majors. See Agricultural Engineering 512.

* Not given in 1957-1958.

† Not given during the academic year, 1957-1958.

402. Agricultural Drawing. Three credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour recitations and laboratory periods each week. Mr. Miller.

Principles and practices in graphical language, such as charts, graphs, pictorial drawings, working drawings, plats, etc. Designed especially for all students in agriculture, to develop skills in giving and in receiving communication through the graphic language. Includes practice in lettering and in the use of drafting instruments.

412. Engineering Problems in Agriculture. Three credit hours. Autumn Quarter. Three lecture discussion periods each week. Professional agricultural engineers only.

An orientation course in agricultural engineering problems relating to crop production, storage, animal housing, conservation, drainage, and the farm home.

501. Field Machinery. Five credit hours. Spring Quarter. Three one-hour recitations and two two-hour laboratory periods each week. Prerequisite, Physics 431. Professional agricultural engineers only. Mr. Warner.

The application of engineering principles in the design and operation of agricultural tillage, planting, and weed control equipment. Practice in identification and application of engineering fundamentals through a systematic study and analysis of these principles as applied to the several types of farm equipment.

Not open to students having credit for Agricultural Engineering 401.

502. Farm Structures. Three credit hours. One Quarter. Autumn and Winter. Three two-hour lecture and laboratory periods each week. Mr. Miller.

Agricultural engineering applications regarding functions, needs, safety, economy, durability, sanitation, materials, conveniences, and other pertinent factors in the arrangement, design, construction, and maintenance of farm buildings, fences, and accessories of the farmstead. Affords opportunity for solution of individual problems.

503. Farm Power. Five credit hours. One Quarter. Winter and Spring. Three one-hour recitations and two two-hour laboratory periods each week. Prerequisite, Agricultural Engineering 401. Mr. Lamp.

Fundamental principles of mechanical power on the farm. The internal combustion engine and the farm tractor are used as a basis for the work which leads to a broad conception of an efficient farm power program.

504. Farm Shop. Five credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour recitation and laboratory periods each week. Prerequisite, Agricultural Education 500. Mr. C. Johnson.

Principles, practices, and applied methods of teaching the selection and use of construction and repair materials; the selection, care and use of tools, tool fitting and farm carpentry, metal work, soldering, electric and acetylene welding, sketching, and the construction, maintenance, and repair of farm and home equipment. Organization of a program of instruction based upon farm needs.

***506. Special Agricultural Engineering Applications in Horticultural Practices.** Five credit hours. Spring Quarter. Prerequisite, five credit hours in horticultural subjects. To be given alternate years. Mr. Lamp.

Primarily for students majoring in horticulture. Power generators and power requirements; machines for tillage, seed preparation, seeding, cultivating, harvesting, combating crop enemies, and for preparing horticultural products for market; irrigation, and steam and electrical sterilization of plats and beds; engineering applications in storage technique.

507. Farm Drainage, Erosion Control, and Irrigation. Five credit hours. One Quarter. Autumn and Spring. Four one-hour recitations and one three-hour laboratory period each week. Prerequisite, Agronomy 501. Mr. Schwab.

An introductory study of the engineering problems of farm drainage and other related farm water management problems. Included practices in leveling, chaining, and in elementary farm surveying.

508. Practical Experience in Agricultural Engineering. Five credit hours if satisfactory report is offered. No credit without report. Ten weeks practical work in industry or its equivalent, prior to fifth year. Open only to and required of all Agricultural Engineering students pursuing curricula leading to the baccalaureate degree in Agricultural Engineering. Staff.

* Not given in 1957-1958.

The student shall present a satisfactory report upon the work done. This report shall include a discussion of the student's observations upon the human and professional aspects of the work with which he was connected and other observation data worthy of record. If a student has had twelve months or more of satisfactory practical experience he may be permitted to substitute a report upon the work so done for the above requirements. The occupation, the work done, and the report shall be subject to approval. For further information concerning the details of the work and of the report, application should be made at the office of the Department.

509. Electricity in Agriculture. Five credit hours. One Quarter. Autumn and Spring. Three one-hour lectures and recitation periods and two two-hour laboratory periods each week. Prerequisite, Mathematics 416 or 421 or Agricultural Engineering 401. Mr. Harkness.

A study of the economic uses of electrical equipment in a production program on the farm and better living in the home. Special emphasis will be made on the use of electricity for light, heat, and power, water supply systems and sewage disposal.

Not open to Dairy Technology majors.

510. Dairy Engineering. Five credit hours. Winter Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Mathematics 421 and 422 or equivalents, and Physics 411 and 412 or equivalents. Mr. Harkness.

Primarily for students in Dairy Technology. A study of the generation and use of steam and electricity for heat and power, and of the operation and testing of steam engines, boilers, pumps, electric motors, plant waste disposal, water supply, etc.

512. Special Field Machinery. Five credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour laboratory and recitation periods each week. Prerequisite, major in agricultural education. Mr. Warner.

A systematic approach in the application of physical principles of field machinery.

The evaluation of farm machinery from the standpoint of adjustment, maintenance, and repair. A study of and laboratory experience in the repairing of common farm machinery. Also the selection of machinery for a unified farm program.

514. Inspection Trip. Two credit hours. Taken the week before the opening of the Autumn Quarter. Prerequisite, fifth year standing. Mr. Lamp.

This trip will include some of the leading agricultural engineering manufacturing, research and service agencies in central United States. The expenses for this trip will be prorated and should not exceed $60.00. A satisfactory written report of the trip is required.

515. Farm Structure Ventilation. Three credit hours. One Quarter. Winter and Spring. Two two-hour recitations and laboratory periods and two hours arranged each week. Prerequisite, eight credit hours in Agricultural Engineering. Mr. Miller.

The special application of principles and practices of ventilation, insulation, and heat to farm structures. The design, construction, and operation of ventilation systems with unheated air for livestock shelters and crop storage is given special consideration. It includes the design of systems for drying or conditioning farm crops in storage, such as the mow curing of hay with forced ventilation and the use of heat in drying seed corn.

516. Farm Structures. Three credit hours. Winter Quarter. Three two-hour lecture and laboratory periods each week. Prerequisite, Mathematics 421 and 422, Engineering Drawing 401. Professional agricultural engineers, second year. Mr. Miller.

An analysis of the building needs in farming correlated with a study of the problems of obtaining and maintaining adequate farm structures. Practice in the design of buildings to meet the needs of different types of farm production programs.

517. Soil and Water Management. Five credit hours. Autumn Quarter. Four one-hour recitations and one three-hour laboratory period each week. Open only to five-year professional agricultural engineers. Prerequisite or concurrent, Agronomy 501 and Civil Engineering 412. Mr. Schwab.

Engineering principles of land drainage and erosion control. Concepts of the use, design, construction, and maintenance of farm water control systems, based on topographical soil and crop requirements.

518. Farm Power Use and Maintenance. Five credit hours. One Quarter.

Autumn, Winter, Spring. Three one-hour recitations and two two-hour laboratory periods. Prerequisite, Agricultural Engineering 512. Open only to Agricultural Education majors. Mr. Lamp.

A study of fundamental principles of construction, operation, maintenance and the application of farm tractors and electric motors to farm power problems. The principles and application of the use of electricity in the home and on the farm.

Not open to students who have credit for Agricultural Engineering 503 and 509.

520. Farm Power. Five credit hours. Winter Quarter. Three one-hour recitations and two two-hour laboratory periods each week. Professional agricultural engineers. Prerequisite, Agricultural Engineering 501. Mr. Lamp.

A study of the various physical principles involved in meeting the functional requirements for an efficient source of farm power. Emphasis is placed upon design. Includes speed, power, motion, and thermal efficiency studies as they are applied to the farm tractor.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

600. Farm and Home Safety. One credit hour. Spring Quarter. Mr. Barden.

A conference hour to discuss causes of accidents and formulate methods for conducting farm and home safety programs. The seminar is designed for students interested in vocational agriculture, home economics, county extension, soil conservation service, and farm organization worn.

605. Advanced Farm Power and Field Machinery. Five credit hours. Spring Quarter. Three one-hour recitations and two two-hour laboratory periods each week. Prerequisite, Agricultural Engineering 503 or 518 and ten hours of agronomy. Mr. Barden, Mr. Warner.

An advanced study of soil-working, planting, and forage-handling machines from the mechanical, operational, and economic standpoint; including a term problem relating to the machinery, power, and labor program requirements and costs on the student's home (or other) farm.

612. Farm Structures Design. Five credit hours. Spring Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Agricultural Engineering 516 and Mechanics 602. Mr. Miller.

Design of building programs for farms, coordinating the engineering, agricultural and social science factors. The design and details of construction for building units and the entire farmstead. Laboratory tests in sanitary features such as ventilation, water supply and heating factors.

613. Advanced Farm Power Equipment. Five credit hours. Autumn Quarter. Three one-hour recitations and three two-hour laboratory periods each week. Prerequisite, Agricultural Engineering 520, Mechanics 607. Mr. Lamp.

A study of the design and use of agricultural harvesting equipment. Power and design requirements necessary for efficient performance are studied under laboratory and field conditions.

617. Soil and Water Conservation Engineering. Five credit hours. Spring Quarter. Three one-hour recitations, two three-hour laboratory periods each week. Prerequisite, Agricultural Engineering 517, Agronomy 608 and Engineering Mechanics 610. Mr. Overholt.

Advanced study of water and soil regulation by engineering methods. Will include the design and operation of soil and water conservation structures, controlled land drainage and irrigation, based upon balanced engineering and economic factors.

***619. Electricity in Agriculture.** Five credit hours. Winter Quarter. Three one-hour lectures and two two-hour laboratory periods each week. Prerequisite, Electrical Engineering 643. Professional agricultural engineers. To be given alternate years.

A study of the application of the fundamental principles of electricity to the farmstead. Special emphasis will be given to the application of electricity to the power, heat, and light problems of agriculture.

Not open for graduate credit.

* Not given in 1957-1958.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. All instructors.

This course is intended for advanced undergraduates and graduate students who are interested in working out problems not included in regular courses offered by the department. The selection of special programs in advanced phases of agricultural equipment science must have the consent of the instructor.

702-703. Advanced Engineering Problems in Agriculture. Three to five credit hours. Autumn, Winter and Spring Quarters. Prerequisite, an appropriate "600" course in the area of the problem, and permission of the instructor. Open to students registered in the agricultural engineering curriculum. All instructors.

Designed to provide work on problems that are now included in regular courses. Practice in the development, organization, solution and report of a problem of the student's choosing.

†704A and B. Practicum in Farm Shop. Two to four credit hours in units of two credit hours for one or more Quarters. First term. Summer Quarter only. Open only to teachers of vocational agriculture. Students may register for both units during the same term but not more than once for the same unit. Each two-hour unit is equivalent of five one-hour periods each week. Mr. C. Johnson.

Advanced methods as applied to practices and teaching farm shop work to meet the practical and educational needs of students in vocational agriculture.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "900" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRONOMY

Offices, 102 Horticulture Building and 203-A Townshend Hall

PROFESSORS VOLK, HOLOWAYCHUK, LAMB, PARK (EMERITUS), AND WILLARD, ASSOCIATE PROFESSORS McLEAN, SMITH, TAYLOR, ASSISTANT PROFESSORS ANDERSON, HOFF, MORTENSEN, AND RAY, MR. FLOWERS, MR. MOORE, AND ASSISTANTS

403. Field Crop Production. Four credit hours. One Quarter. Autumn, Winter, Spring. Four recitation periods each week. Mr. Anderson.

A study of the fundamental principles essential to crop production and a survey of adaptation, utilization, and problems in production of leading agronomic crops.

501. Soils. Four credit hours. One Quarter. Autumn, Winter, Spring. Four one-hour lecture periods each week. Prerequisite, two Quarters of general chemistry. Mr. Flowers.

A consideration of the soil as a natural system with emphasis on physical and chemical properties. An introduction to the various phases of the study of soil, including soil fertility, is given.

515. Grain Crops. Four credit hours. One Quarter. Winter and Spring. Three lecture periods and one two-hour labtoratory period each week. Prerequisite, Agronomy 403, or consent of the instructor and five hours of Botany. Mr. Ray.

A study of the grain crops, their classification, geographic distribution, culture, varieties, improvement, seed selection, seed production, harvesting, handling, recognition, grading, and farm and commercial uses.

Not open to students who have credit for Agronomy 510 and 511.

520. Forage Crops. Four credit hours. One Quarter. Autumn and Spring. Three recitations and one two-hour laboratory period each week. Prerequisite, Agronomy 403 and five hours of Botany.

Characteristics, tolerances, requirements, uses, and production of principal forage plants. Management of pastures and meadows, based on a study of literature and experimental data.

Not open to students who have credit for Agronomy 512 and 513.

† Not given during the academic year, 1957-1958.

525. Weeds and Weed Control. Three credit hours. Spring Quarter. Three lectures per week. Prerequisite, five hours of botany, Agronomy 403 or five hours of horticulture. Mr. Willard.

A study of weeds and losses due to them, how they injure crops, how they are introduced and spread, and their control by tillage, chemicals, plant competition, and soil sterilization.

Not open to students who have credit for Agronomy 610.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Organization of Soil and Crop Management Systems. Five credit hours. One Quarter. Winter and Spring. Three lectures and two discussion periods each week. Prerequisite, Agricultural Biochemistry 410 or equivalent, Agronomy 501, and Agronomy 510 (or 502) or Agronomy 512 (or 503). Mr. Willard.

Recognizing, correlating and solving soil and crop problems relating to the improvement of soil resources and to efficient production and use of field crops. Practical application of chemical, physical, biological and economic information and experience to the building of soil and crop management systems for various types of farming.

603. Origin and Classification of Soils. Five credit hours. Spring Quarter. Four lectures and one three-hour laboratory period each week. Prerequisite, Agricultural Biochemistry 410 and Agronomy 501, or equivalent, and ten hours of biological science. Mr. Holowaychuk.

The characteristics of soils as developed under various climatic conditions and their application in soil classification with special reference to Ohio conditions. Laboratory study of soil characteristics, field trips to several of the important soil areas in Ohio.

604. Soil Erosion and Its Control. Five credit hours. Autumn Quarter. Four lectures and one three-hour laboratory period each week. Prerequisite, Agricultural Biochemistry 410 and Agronomy 501, or equivalent, and ten hours of biological science. Mr. Holowaychuk.

A study of the nature, causes, occurrences, and economic importance of soil erosion, and of the methods and agencies for its control. Field trips for study of erosion in different regions of the state with visits to erosion experiment station and demonstration control areas.

605. Soil Microbiology. Five credit hours. Spring Quarter. Three lectures and two three-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 410, Agronomy 501, and Bacteriology 607 or the permission of the instructor. Mr. Mortensen.

A study of the morphology and physiology of soil microorganisms and of their biochemical transformations of inorganic and organic materials in relation to soil fertility.

Not open to students who have credit for Agronomy 615 and 616.

608. Soil Physics. Five credit hours. Autumn Quarter. Three lecture hours and two two-hour laboratory periods each week. Prerequisite, Agronomy 501 or equivalent and Physics 411 or the equivalent. Mr. Taylor.

A study of the physical makeup and properties of soil, including structure, thermal relationships, consistency, plasticity, water, and their relationships.

Not open to students who have credit for Agronomy 617 and 618.

611. Soil Fertility. Three credit hours. One Quarter. Autumn and Winter. Three one-hour lecture periods each week. Prerequisite, Agronomy 501. Mr. Mortensen.

A study of the various factors affecting soil productivity and the practices needed in good soil management. Consideration is given to the significance of cultivation, drainage, rotations, organic matter maintenance and the uses of manures, fertilizers, and liming materials.

614. Field Crop Breeding. Four credit hours. Winter Quarter. Three lectures and one two-hour laboratory period each week. Given in alternate years. Prerequisite, Agricultural Biochemistry 410 or equivalent, five hours of Botany, Zoology 403, or equivalent, and five hours of Agronomy. Mr. Smith.

Principles of genetics and methods of plant breeding applied to the improvement of field crops and the ultimate development of superior varieties.

Not open to students who have credit for Agronomy 607.

620. Pastures and Pasture Management. Three credit hours. Spring Quarter. Three lecture periods each week. Prerequisite, Agronomy 403, 501 and 512 or the consent of the instructor. Mr. Anderson.

An advance course dealing primarily with the establishment, management, maintenance, and utilization of the important forage species as rotational, supplemental, and permanent pastures and ranges.

640. Field Crop Ecology. Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Agronomy 501, 510 (or 502), 512 (or 503), Botany 601, and permission of the instructor. Mr. Willard.

A study of the relationship of crop plants to climate, soils, and other limiting factors of distribution, production, and quality.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, ten hours of biological science, ten hours of agronomy, and the consent of the instructor. The staff.

Eligible students may select special problems, not included in regular courses, and involving library, laboratory or field studies in soil fertility, soil management, soil chemistry, soil physics, soil biology, soil survey methods, soil conservation, field crop management, seed production, field crop breeding, construction and management of turf areas, weed control, and experimental methods in agronomy.

712. Chemistry of Soils and Fertilizers. Five credit hours. Winter Quarter. Three one-hour lecture periods and two three-hour laboratory periods each week. Prerequisite, Agronomy 611, or equivalent, and one Quarter of quantitative analysis and permission of the instructor. Mr. MeLean.

A study of the chemical properties of soils and fertilizers which affect plant growth and composition. The laboratory consists of a study of laboratory methods and makes soil and fertilizer analyses.

Not open to students who have credit for Agronomy 612.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "900" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AIR SCIENCE

Office, 307 Military Science Building

COLONEL McCLENDON AND STAFF

A Senior Unit of the Air Force Reserve Officers' Training Corps is maintained at The Ohio State University. Students may elect Air Science to fulfill the Board of Trustees requirement for Military Instruction. The primary objective of the Air Force ROTC is to develop in students those attributes of character, personality, and leadership required of an officer of the United States Air Force and to encourage interest in the essentials of good citizenship. Students who can qualify physically are eligible to apply for flying training upon graduation and commissioning.

The curriculum in Air Science consists of two main divisions, Basic and Advanced. Basic Air Science is offered during the freshman and sophomore years and meets the requirement established by the Board of Trustees for military instruction of all male students during the first six Quarters in residence. Basic Air Science courses, common to all freshman and sophomore students, provide instruction in Introduction to AFROTC; Introduction to Aviation; Fundamentals of Global Geography; International Tensions and Security Organizations; Military Instruments of National Security; Elements of Aerial Warfare; Careers in the United States Air Force; Basic Military Training.

Advanced Air Science, normally scheduled during the junior and senior years, consists of six Quarters of instruction plus attendance at four weeks of summer camp, scheduled at the end of the junior year. Satisfactory completion of Basic Air Science or its equivalent is a prerequisite to Advanced Course enrollment. Final selection of Advanced students is based on the student's record. Students enrolling in the Advanced course agree in writing to continue in the Air Force ROTC for the remainder of the course, devoting five hours each week to the prescribed training and to attend the required summer camp. An officer type "Air Force Blue" uniform is furnished each student. Advanced course students are paid approximately $27 a month. Transportation, food, clothing, and medical care are provided students attending summer camp. The pay for summer camp duty is approximately $78.

Air Science courses for the Advanced students provide instruction in: Air Force Commander and his Staff; Problem Solving; Communications in the Air Force; Military Justice System;

Weather and Navigation; Air Base Functions; Principles of Leadership and Management; Military Aspects of World Political Geography; Career Guidance; Military Aviation and the Evolution of Warfare; Briefing for Commissioned Service, and Leadership Laboratory.

Students formally enrolled in the Advanced Course and those in the Basic Course who express interest in and are qualified for Advanced Course enrollment are recommended for military deferment from selective service induction. This deferment is effective until completion of the normal undergraduate course of instruction, provided the student continues his Air Force enrollment and maintains satisfactory academic progress toward graduation.

BASIC AIR SCIENCE (FRESHMEN AND SOPHOMORES)

401-402-403. National Defense and the Air Force. Two credit hours each quarter. Two hours recitation and one hour Leadership Laboratory. Leadership Laboratory throughout the year in basic military training and fundamentals of drill and ceremonies. Staff.

401. Introduction to AFROTC. Introduction to Aviation. First Quarter students. Autumn, Winter, Spring.

402. Military Instruments of National Security, Fundamentals of Global Geography. Second Quarter students. Autumn, Winter, Spring.

403. International Tensions and Security Organizations. Third Quarter students. Autumn, Winter, Spring.

501-502-503. Elements and Potentials of Air Power. Two credit hours each Quarter. Two hours recitation and one hour Leadership Laboratory. Leadership Laboratory throughout the year in basic military training and fundamentals of drill and ceremonies, emphasizing responsibilities of the noncommissioned officer. Staff.

501. Fundamentals of a Career in the USAF, Introduction to Aerial fare, Weapons. Fourth Quarter students. Autumn, Winter, Spring.

502. Targets, Aircraft. Fifth Quarter students. Autumn, Winter, Spring.

503. Aerial Operations, World-wide System of Air Force Bases. Sixth Quarter students. Autumn, Winter. Spring.

ADVANCED AIR SCIENCE (JUNIORS AND SENIORS)

Prerequisite to enrollment in the following courses is completion of Basic Air Science or equivalent and acceptance by the Air Science Department as an advanced course student.

601-602-603. The Air Force Officer in the Air Age. Three credit hours each quarter. Autumn (601), Winter (602), Spring (603). Four hours recitation and one Leadership Laboratory. Leadership Laboratory throughout the year with cadet officers assuming positions of command for parades and ceremonies. Staff.

601. Introduction to Advanced AFROTC, Communicating in the Air Force, Instructing in the Air Force.

602. Air Force Commander and his Staff, Creative Problem Solving, Military Justice System.

603. Air Navigation, Weather, Air Force Base Functions.

701-702-703. Leadership and Air Power Concepts. Three credit hours each quarter. Autumn (701), Winter (702), Spring (703). Four hours recitation and one hour Leadership Laboratory. Leadership Laboratory throughout the year with cadet officers assuming positions of command for parades and ceremonies. Staff.

701. Principles of Leadership and Management.

702. Military Aspects of World Political Geography.

703. Career Guidance, Military Aviation and the Evolution of Warfare, Briefing for Commissioned Service.

AMERICAN HISTORY

(See History)

ANATOMY

Office, 414 Hamilton Hall

PROFESSOR KNOUFF, ASSOCIATE PROFESSORS LEACH AND HAYES

407. Comparative Anatomy. Five credit hours. Spring Quarter. Two lecture and six laboratory hours each week. Predental course, second year. Prerequisite, Zoology 401 and 402 or an equivalent. Mr. Leach.

The anatomy of the shark and the cat.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

613. Comparative Anatomy of the Vertebrates. Five credit hours. Autumn Quarter. Two lecture or recitation and six laboratory hours each week. Prerequisite, Zoology 401-402. Mr. Leach.

The basic plan of the vertebrates and their evolution through the lower classes.

616. Developmental Anatomy. Six credit hours. Spring Quarter. Three lecture or recitation and six laboratory hours each week. Prerequisite, Anatomy 619 or the equivalent. Mr. Knouff, Mr. Hayes.

A general consideration of gametogenesis, fertilization, and germ layer formation followed by a more detailed survey of organogenesis in the pig and human.

619. Comparative Anatomy of the Vertebrates. Five credit hours. Winter Quarter. Two lecture or recitation and six laboratory hours each week. Prerequisite, Anatomy 613 or equivalent. Mr. Leach.

Morphology of mammals, including man, from the point of view of their structural evolution.

ANIMAL SCIENCE

Office, 203 Plumb Hall

PROFESSORS KAUFFMAN, GAY (EMERITUS), KUNKLE, MOXON, BELL, KLOSTERMAN, LUDWICK, ASSOCIATE PROFESSORS R. F. WILSON, TYZNIK, BENTLEY, CAHILL, GEORGE R. JOHNSON, ASSISTANT PROOFESSORS TEAGUE, R. R. JOHNSON, MR. MERRITT, MR. GEORGE R. WILSON, MR. CLINE, MR. JUDY, MR. ALTHOUSE

GENERAL LIVESTOCK PRODUCTION

401. Market Types and Classes of Livestock. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures and two two-hour laboratory periods each week. Mr. George R. Johnson, Mr. Merritt, Mr. R. F. Wilson, Mr. George R. Wilson, Mr. Judy.

Designed to give the student an insight into the field of animal husbandry and an appreciation of the value and use of domestic animals and animal products. The points of individuality and quality which contribute to market value are given special emphasis. Such study is applied to beef, cattle, swine, sheep, and horses.

The relationship existing between the carcass and the live animals, is established through a liberal use of the Meats Laboratory.

402. Feeds and Feeding Practice. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite, Animal Science 401 or Dairy Science 401. Mr. Tyznik, Mr. Cline.

The common farm animals feeds, their source, composition, characteristics, and feeding value. The balancing of rations. Recommended feeding practices for the feeding of beef cattle, dairy cattle, swine, sheep, and horses.

Not open to students who have credit for Dairy Science 402. This course will count toward major in Dairy Science.

407. Meat Selection and Identification. Three credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour laboratory periods each week. For Home Economics students. Mr. Kunkle, Mr. Cahill, Mr. Althouse.

A general course in meats in which the nutritive value and place of meat in the diet are considered. The physical properties of meat as determined by the structure of muscle, connective tissue, and fat composing the various carcasses are studied as well as the factors that determine grade. Also instruction and practice in identification of grades, wholesale and retail cuts, specialties, and sausage products.

501. Horse Production and Management. Five credit hours. Winter Quarter. Three lectures and two laboratory periods each week. Prerequisite, Animal Science 401 and 402, and ten hours of biological science. Mr. Merritt.

Text, supplemented by lectures and special assignments. Classroom and laboratory sessions given to discussion of problems in breeding, feeding, and miscellaneous management of horses at work and in the stud. The aim is to furnish needful information with reference to launching the horse enterprise, the purchase of foundation stock, commercial and pure bred, common management problems, also cost of developing horses from foalhood to maturity. Inspection trips to nearby horse farms. Special emphasis on saddle horses and equitation skills.

502. Beef Cattle Production and Management. Five credit hours. One Quarter. Autumn and Spring. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Science 401 and 402, and ten hours of biological science. Mr. George R. Wilson.

The economic importance of beef cattle and the types of livestock farming to which beef production is best adapted; beef cattle in the conservation program; carcass yield as the ultimate goal; the sources of feeder cattle; factors determining age, grade, and sex of cattle fed and length of the feeding period; rations and feed-lot practices; the breeding herd, both commercial and pure bred; the auction sale and appraisal of pedigrees; fitting for show and sale; cattle transportation, shrinkage and fill; the business of making beef.

503. Swine Production and Management. Five credit hours. One Quarter. Autumn and Spring. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Science 401 and 402, and ten hours of biological science. Mr. R. F. Wilson.

Topics covered include: selection of breeding stock, reproduction, feeding, management and sale of commercial and breeding swine. Swine herds, markets, and research stations are visited.

505. Sheep Production and Management. Five credit hours. One Quarter. Winter and Spring. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Science 401 and 402, and ten hours of biological science. Mr. George R. Johnson, Mr. Judy.

Text, supplemented by lectures and special assignments. The problems and practices in breeding, feeding and management of sheep. The place of sheep on the farm, their advantages as a source of livestock income; flock establishments, selection and purchase of foundation stock, commercial and purebred; the wool crop, market classes and grades; sheep parasites and their control; sources and selection of feeder lambs; rations, equipment. Inspection trips—breeding flocks, feed yards, Ohio Experiment Station, Ohio Wool Warehouse.

506. Advanced Livestock Judging. Five credit hours. Spring Quarter. Five two-hour laboratory periods each week. Prerequisite, Animal Science 401, fifteen hours of biological science and at least two of the following: Animal Science 501, 502, 503, and 505, or permission of the instructor. Mr. Merritt.

An advanced class for juniors and seniors who have had elementary work in judging and who desire more inclusive and intensive judging experience than is offered in Animal Science 401. Training of basic importance to the prospective livestock man. The training stresses the importance of method in making rapid and accurate observations, and helps to set up new standards of animal excellence.

509. Meats and Meat Products. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures and two three-hour laboratory periods each week. Prerequisite, Animal Science 401 and 402. Mr. Kunkle, Mr. Cahill.

A general course in meat and meat products concerned with the selection of slaughter animals. Emphasis is given to the relationships of livestock judging, breeding, and feeding to carcass yield, cost and cut-out value of the various classes and grades. Problems of the packing industry and methods of merchandising are studied. Laboratory affords practice in dressing, cutting, curing and processing.

510. Meat Grading. Three credit hours. Spring Quarter. One lecture and

two laboratory periods each week. Prerequisite, Animal Science 401 and 402; for Home Economics students, Animal Science 407. Mr. Kunkle, Mr. Cahill.

A study of the variable factors that determine the value of carcasses and cuts of beef, pork, veal, and lamb in accordance with government and commercial grading standards. Laboratory practice in grading will be afforded at the local packing houses.

515. Livestock Management. Five credit hours. One Quarter. Winter and Spring. Three lecture-discussion periods and two two-hour laboratory periods each week. Prerequisite, Animal Science 401 and 402. Mr. Merritt.

This course is designed primarily for Agricultural Education majors. The course will cover subject matter and teaching aids in the problems of livestock breeding, feeding and management of swine, beef cattle, and sheep. Laboratory exercises will include techniques in the selection of breeding stock, fitting and major management problems.

NOTE: FOR LIVESTOCK BREEDING COURSES—See Dairy Science 520 and Dairy Science 620. These courses will count toward a major in Animal Science.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

608. Livestock Marketing (see Agricultural Economics 608). Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Animal Science 402 and Agricultural Economics 613. Mr. Henning.

Selling methods, basis of sale, agencies involved, organization of markets, transportation, financing, market location, marketing costs, prices, when to market, grade differentials, direct marketing, government regulation, recent developments will be studied.

618. Animal Nutrition. Five credit hours. One Quarter. Winter and Spring. Five lecture-discussion and demonstration periods each week. Prerequisite, Agricultural Biochemistry 411, Animal Science 402, Botany 401, 402, and Zoology 401 and 403, or Zoology 401, 402, 403, and Botany 401. Mr. Tyznik.

The principles of nutrition and their application to farm animals.

619. Advanced Meats Technology. Three credit hours. Winter Quarter. Two lectures and two one-hour laboratory periods each week. Prerequisite, Animal Science 509 or 407 and a minimum of 25 hours in Biological Science. Mr. Kunkle, Mr. Cahill.

Evaluation of scientific contribution to meat products processing.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, senior standing in the College of Agriculture. The Staff.

Special assignments in the advanced phases of any of the lines of animal production and meats. Students will elect work in desired subjects after conference with the instructor in charge.

†799. Workshop. Recent Advances in Animal Nutrition. Four credit hours. Summer Quarter, first term. Three weeks—full time. Prerequisite, thirty hours of biological science including Agricultural Biochemistry 410, or equivalent or permission of the instructor. Mr. Tyznik.

NOTE: Students desiring work in animal nutrition, see also Agricultural Biochemistry 601, 609, 707.

NOTE: For course in Advanced Livestock Breeding, see Dairy Science 620.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ANTHROPOLOGY

(See Sociology)

† Not given during the academic year, 1957-1958.

ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Office, 106 Brown Hall

PROFESSORS WHITAKER AND SUTTON, ASSISTANT PROFESSOR TOBEY

ARCHITECTURE

702. Historical Analysis. Two credit hours. Winter Quarter. Mr. Tobey.
A review of the evolution of community patterns.

703. Historical Analysis. Two credit hours. Spring Quarter. Mr. Sutton.
An introductory study of the theory and practice of city and regional planning.
Not open to students who have credit for Architecture 666.

LANDSCAPE ARCHITECTURE

500. Appreciation of Landscape Design. Two credit hours. Spring Quarter. Two lectures each week. Open to any student not majoring in Landscape Architecture. No prerequisite. Mr. Tobey.
A survey course that is arranged especially for those who wish to gain a better understanding and appreciation of design as applied to out-of-door areas.

***507. History of Landscape Architecture.** Three credit hours. Autumn Quarter. Three lectures each week. Given in alternate years. Mr. Sutton.
An historical study of landscape design for professional and non-professional students. The course covers the development of landscape design in the Mediterranean Countries through the period of the Italian Renaissance. Illustrated lectures, class discussions, collateral reading, and a report.
Not open to students who have credit for Landscape Architecture 542.

***508. History of Landscape Architecture.** Three credit hours. Winter Quarter. Three lectures each week. Given in alternate years. Prerequisite, Landscape Architecture 507. Mr. Sutton.
An historical study of landscape design for professional and non-professional students. The course covers landscape design in France, England, and the United States. Illustrated lectures, class discussions, collateral reading, and reports. A continuation of Landscape Architecture 507.
Not open to students who have credit for Landscape Architecture 543.

550. Arrangement and Planting of Gardens and Small Properties. Five credit hours. Autumn Quarter. Two lectures and nine laboratory hours each week. Mr. Tobey.
A course in landscape design for the non-professional student emphasizing the design, construction, and planting of small properties.

629-727-728. Planting Design. Five credit hours each. Spring, Autumn, and Winter Quarters. Prerequisite, Horticulture 550 and 551, Landscape Architecture 618. Students majoring in Horticulture may obtain permission from the instructor to register in Landscape Architecture 629, 727, and 728 without the prerequisite of Landscape Architecture 618. Mr. Sutton.
Problems in the use of plant composition in developing landscape design.
Not open to students who have credit for Landscape Architecture 624-625-626.

ART

(See Fine and Applied Arts)

BACTERIOLOGY

Office, 210 Pharmacy and Bacteriology Building

PROFESSORS BIRKELAND, STAHLY AND WEISER, ASSOCIATE PROFESSORS RANDLES AND RHEINS, ASSISTANT PROFESSORS BALDWIN AND MALANEY

509. Microbiology in Relation to Man. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class periods each week. Prerequisite, ten hours of natural science. Mr. Birkeland, Mr. Randles, and assistants.

* Not given in 1957-1958.

A general course designed to acquaint the student with and give him a better understanding of the various activities of microorganisms which have a bearing on the physical and economic well-being of man. It deals with the nature of bacteria and their relationship to food preparation and preservation, soil fertility, sanitation, public health, and diseases of man, animals and plants.

Not open to students who have credit for "600" courses in bacteriology.

This course may not be taken concurrently with Bacteriology 607.

Not recommended for students who intend to take other courses in Bacteriology.

550. General Bacteriology. Five credit hours. Spring Quarter. Three class periods and three two-hour laboratory periods each week. Prerequisite, fifteen hours of chemistry and ten hours of biological science. Mr. Stahly, Mr. Weiser, Mr. Baldwin.

The lectures deal with the morphology, classification, and physiology of microorganisms. The relation of microbial physiology to problems of soil, dairy, food, and sanitation is discussed. The laboratory provides exercises in staining, observing, culturing, and identifying microorganisms.

Not open to students who have credit for Bacteriology 509 or 607.

Not open to students majoring in bacteriology.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

These courses in bacteriology are open to advanced undergraduates and graduate students only. Prerequisite, fifteen hours of chemistry and ten hours of a biological science.

607. General Bacteriology. Five credit hours. One Quarter. Autumn, Winter, Spring. Three class periods and three two-hour laboratory periods each week. May not be taken concurrently with Bacteriology 509. Mr. Stahly, Mr. Weiser, Mr. Randles, Mr. Baldwin, Mr. Malaney, and assistants.

The lectures consider the morphology, physiology, and classification of bacteria as well as some of their applications to everyday processes. The laboratory work provides experience in preparing media and in staining, observing, culturing, isolating, and identifying microorganisms.

Not open for graduate credit to students majoring in bacteriology.

Not open to students who have credit for Bacteriology 550.

608. Introduction to Pathogenic Bacteriology. Three credit hours. Winter Quarter. Three class periods each week. Not recommended for premedical students. Prerequisite, Bacteriology 550 or 607. Mr. Birkeland, Mr. Rheins.

A general course designed to acquaint students with those bacteria causing disease in man; their habits and modes of transmission, and an elementary consideration of the immunological processes involved. Designed primarily for students who desire a general knowledge of the field and not for students majoring in bacteriology.

610. Dairy Bacteriology. Three credit hours. Autumn Quarter. Three class periods each week. Prerequisite, Bacteriology 550 or 607. Mr. Weiser.

Sources and kinds of microorganisms in milk and other dairy products. Microrganisms involved in desirable and undesirable fermentations and methods of control. The importance of sanitation in the production and handling of milk and other dairy products. Emphasis is placed upon milk-borne diseases in relation to public health.

611. Dairy Bacteriology: Laboratory. Three credit hours. Autumn Quarter. Three two-hour laboratory periods each week. Prerequisite or concurrent, Bacteriology 550 or 610. Mr. Weiser and assistants.

A study of standard methods used to control microorganisms discussed in Bacteriology 610. Normal and abnormal fermentations are studied in detail.

634. Sanitary Bacteriology. Three credit hours. Winter Quarter. Two class periods and two two-hour laboratory periods each week. Prerequisite, Bacteriology 550 or 607. Mr. Weiser, Mr. Malaney and assistants.

The principles involved in water purification, including swimming pools, and municipal and industrial water supplies. The role of microorganisms in the treatment of sewage and industrial wastes. Emphasis is placed upon the role of sanitation and public health regulations in the control of infectious diseases transmitted through water and sewage.

636. Food Microbiology. Three credit hours. One Quarter. Autumn and Spring. Three class periods each week. Prerequisite, Bacteriology 509 or 550 or 607. Mr. Weiser, Mr. Malaney.

The role of microorganisms in normal and abnormal fermentations (food spoilage) and their control; methods of food preservation. Emphasis is placed upon the role of sanitation and public health regulations in the control of infectious diseases transmitted through food.

637. Food Microbiology: Laboratory. Three credit hours. Autumn Quarter. Three two-hour laboratory periods each week. Prerequisite, Bacteriology 550 or 507; prerequisite or concurrent, Bacteriology 636. A previous course in Pathogenic Bacteriology is recommended or may be taken concurrently. Mr. Weiser, Mr. Malaney and assistants.

Laboratory work on organisms discussed in Bacteriology 636.

BOTANY AND PLANT PATHOLOGY

Office, 102 Botany and Zoology Building

PROFESORS MEYER, TRANSEAU (EMERITUS), STOVER (EMERITUS), SAMPSON (EMERITUS), BLAYDES, ALLISON, YOUNG, TAFT, WILSON, ALEXANDER, WOLFE, GRAY, AND SWANSON, ASSOCIATE PROFESSORS WALLER, PADDOCK, POPHAM, AND BOHNING, ASSISTANT PROFESSORS LAMPE, JONES, WEISHAUPT, ELLETT, SCHMITTHENNER, AND GILBERT, MR. HUMPHREY, MR. TROXEL, MR. SCHMITT, MR. PLATT, MR. FISHER, AND ASSISTANTS

401. General Botany. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation periods each week. Staff and assistants.

Plants as living organisms and as constituting a variously interrelated part of man's environment. Basic processes and structures in green plants; their relations to factors in the environment, to the development of the various organs of a plant, to plan behavior, to the existence of non-green plants and animals, and to the special energy and material needs of man. Frequent comparison of processes in plants with those in man. A continuing acquirement and application of scientific procedures through observations and discussions. No lectures.

402. General Botany. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation periods each week. Prerequisite, Botany 401. Staff and assistants.

A continuation of Botany 401 enriched by an ever broadening background of processes and interrelations. Reproduction in plants, the basic processes in heredity, heritable and non-heritable variations in plants (their causes, manner of occurrence, consequences, and the advantages man takes of them), the biological and economic relations of non-green plants, the various types of plants, the vegetation of a continent, plants in relation to conservation.

406. Local Flora. Five credit hours. Spring Quarter. Two lectures and six laboratory hours and field work each week. Prerequisite, Botany 401-402. Mr. Waller, Mr. Humphrey, Miss Weishaupt, Mr. Fisher.

A laboratory, field, and lecture course in identifying plants common in Ohio. Emphasis is placed on the use of keys and manuals and on learning to recognize plants in the field. Several off-campus Saturday field trips are included.

519. General Plant Pathology. Five credit hours. One Quarter. Autumn and Spring. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 401-402. Mr. Ellett, Mr. Troxel.

An introduction to the diseases of cultivated plants. The nature, importance, causes, symptoms, classification, and control of plant diseases; the life histories of pathogenic organisms, and effects of the environment, cultural practices, and heredity of the host plants upon the prevalence of diseases.

Not open to students who have credit for Botany 422.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Plant Ecology. Five credit hours. Autumn Quarter. Three lectures and one three-hour laboratory period each week. Prerequisite, Botany 401-402 and four additional Quarters of biological science. Mr. Wolfe.

Patterns of vegetation, local, regional, and continental; historic, climatic, soil, and biotic

factors that limit the various plant communities. Lectures, discussions, and laboratory work, on tundra, boreal forests, hemlock-hardwood and deciduous forest. Field study of Ohio plant communities and their successions. Several extended Saturday field trips.

602. Plant Ecology. Five credit hours. Spring Quarter. Three lectures and one three-hour laboratory period each week. Prerequisite, Botany 601. Mr. Wolfe.

Continuation of Botany 601. The forest, grassland, and desert vegetation of western North America. Lectures, reference reading, and laboratory work. Further study of Ohio plant communities. Several extended Saturday field trips.

605. Plant Physiology. Five credit hours. One Quarter. Autumn and Winter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 401-402 and two Quarters of chemistry. Mr. Meyer, Mr. Swanson, Mr. Bohning, Mr. Platt.

A fundamental course in plant physiology; solutions, colloidal systems, cell physiology, diffusion phenomena, osmotic quantities, permeability, transpiration, absorption and movement of water, photosynthesis.

606. Plant Physiology. Five credit hours. One Quarter. Winter and Spring. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 605. Mr. Meyer, Mr. Swanson, Mr. Bohning, Mr. Platt.

Continuation of Botany 605; photosynthesis, synthesis of carbohydrates, fats, and nitrogenous compounds, absorption and utilization of mineral salts, digestion, translocation of solutes, respiration, growth, reproduction, dormancy.

***613. Bryophytes, Pteridophytes, and Gymnosperms.** Five credit hours. Winter Quarter. Four two-hour laboratory-discussion periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biological sciences. Given in alternate years. Miss Lampe.

A study of the comparative structures and life histories of the liverworts, mosses, ferns, and conifers. Hereditable variations in form and structure within and among these groups during geologic time; world distribution and habitats of fossil and living genera.

614. Morphology of the Angiosperms. Five credit hours. Autumn Quarter. Four two-hour laboratory-discussion periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biological sciences. Mr. Blaydes.

The basic principles of the reproductive mechanism in angiosperms and their application to problems in genetics, plant breeding, and crop production.

615. Plant Microtechnic. Five credit hours. Winter Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biological sciences. Mr. Blaydes.

Principles and methods of fixing, imbedding, sectioning, and staining of plant tissues for permanent microscopic preparations. Opportunity is given for preparing a collection of microscope slides suitable for use in teaching. Students having research materials may use these in making microscopic preparations.

619. Economic Botany. Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Botany 401-402 and two additional Quarters of biological science or two Quarters of geography. Mr. Waller.

The plant sources of sugars, fats, proteins, fibers, rubber, and wood products. Related problems of production and distribution are illustrated and discussed. Field trips to distributing centers are scheduled when possible.

635. Plant Genetics. Five credit hours. Autumn Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Botany 401-402 and Zoology 403 or 603. Mr. Paddock.

The role of lethals, linkage, heterogony, isolation, introgression, polyploidy, apomixis, translocation, and cytoplasmic inheritance in evolution. Laboratory experience with acetocarmine smears, colchicin, progeny tests, random number tables, and herbarium specimens.

640. Developmental Plant Anatomy. Five credit hours. One Quarter. Winter and Spring. Four two-hour laboratory-discussion periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biological sciences. Mr. Popham.

* Not given in 1957-1958.

The initiation, differentiation, and development of tissues, tissue systems and organs of vascular plants, and a comparative study of the various structures. This course is a desirable antecedent to advanced work in plant physiology, pathology, and morphology.

650. Diseases of Fruit Crops. Three credit hours. Autumn Quarter. Three two-hour laboratory-discussion periods each week. Prerequisite, Botany 419. Mr. Allison.

A detailed study of important tree and small fruit crop diseases; their cause, distribution, severity, and specific control measures.

Not open to students who have credit for Botany 656A.

651. Diseases of Cereal and Forage Crops. Three credit hours. Winter Quarter. Three two-hour laboratory-discussion periods each week. Prerequisite, Botany 419. Mr. Ellett.

A detailed study of important cereal and forage crop diseases; their cause, distribution, severity, importance, and specific control measures.

Not open to students who have credit for Botany 656C.

652. Diseases of Vegetable Crops. Three credit hours. Spring Quarter. Three two-hour laboratory-discussion periods each week. Prerequisite, Botany 419. Mr. Allison.

A detailed study of important vegetable crop diseases; their cause, distribution, severity, importance, and specific control measures.

Not open to students who have credit for Botany 656B.

653. Mycology. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 401-402, and two additional Quarters of biological sciences. Mr. Gray.

A study of structures, life histories, and classification of the fungi.

654. Advanced Mycology. Three credit hours. Spring Quarter. Given in alternate years. Three two-hour laboratory periods each week. Prerequisite, Botany 653 or equivalent. Mr. Gray.

Advanced detailed study of specific groups of fungi, with emphasis on their morphology, cytology, and genetics.

655. Industrial Mycology. Three credit hours. Spring Quarter. Two discussion hours and one two-hour laboratory period each week. Prerequisite, Botany 605-606, or two Quarters of organic chemistry. Desirable antecedent, Botany 653. Mr. Gray.

The relation of fungi, especially saprophytic fungi, to human affairs, with emphasis upon their actual and potential applications in industry.

658. Medical Mycology. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, fifteen hours of biological science including Bacteriology 607. Mr. Schmitt.

The fungi pathogenic to man, their structure and distribution, and the importance of human hycotic diseases.

660. Bacterial Plant Pathogens. Three credit hours. Autumn Quarter. Two lecture-discussion hours and one two-hour laboratory period each week. Prerequisite, Botany 419 and Bacteriology 607. Given in alternate years. Mr. Troxel.

A study of the representative types of bacterial plant diseases and factors affecting their control, severity, distribution, and economic importance. Methods used in studying plant pathogenic bacteria.

†**664. Field Botany.** Four credit hours. First term. Prerequisite, twenty hours of biological science, including Botany 401-402 or equivalent. Given only at Franz Theodore Stone Laboratory during the Summer Quarter. Mr. Fisher.

Collection, preservation, field and laboratory identification, and local distribution of plants of the major groups.

Not open to students who have credit for Hydrobiology 664.

† Not given during the academic year, 1957-1958.

665. Algae. Five credit hours. Spring Quarter. Four two-hour laboratory-discussion periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biological sciences. Mr. Taft.

A general course covering identification, growth, reproduction, evolution, distribution and economic importance of the algae.

***666. Plant Virus Diseases.** Three credit hours. Autumn Quarter. Two lecture-discussion hours and one two-hour laboratory period each week. Prerequisite, a course in plant pathology. Given in alternate years. Mr. Troxel.

A study of representative types of plant virus diseases; factors affecting their control, severity, distribution, and economic importance. Methods used in studying plant viruses.

671. Plant Pathology. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 401, 402, fifteen additional hours of biological science and permission of the instructor. Mr. Troxel, Mr. Ellett.

A course in plant pathology emphasizing general principles of plant disease development and control for students with a considerable background in the biological sciences. A number of representative plant diseases will be studied.

Not open to students who have credit for Botany 710.

Not open to students majoring in plant pathology.

701. Special Problems. One to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, Botany 401-402 and two additional Quarters of some biological subject. The staff.

Problems may be selected in the fields of Taxonomy, Morphology, Anatomy, Algology, Physiology, Ecology, Genetics, Cytology, Plant Pathology, and Mycology.

710. Principles of Plant Pathology. Three credit hours. Winter Quarter. One lecture or discussion hour and two two-hour laboratory periods each week. Prerequisite, Botany 650, or 651, or 652. Mr. Allison.

A systematic study of the basic factors governing the development of plant diseases, including host-parasite relationships, effect of environment on disease development, and the nature of disease resistance.

***711. Methods in Plant Pathology.** Three credit hours. Autumn Quarter. Given in alternate years. Six laboratory-discussion hours each week. Prerequisite, at least one "600" level course in plant pathology or bacteriology.

A laboratory course designed to acquaint students with plant pathological research methods and special techniques involved in microscopic recognition of pathogens in plant tissues, isolation and culture of pathogens, and demonstration of the pathogenicity of the several types of plant pathogens (bacteria, fungi, viruses, nematodes).

718. Physiology of Fungi. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Botany 605-606 and 653. Mr. Gray.

The physiology of the nutrition, growth, and reproduction of fungi.

725. Physiological Methods. Three credit hours. Winter Quarter. Six laboratory hours each week. Prerequisite or concurrent, Botany 605-606. Mr. Swanson.

A laboratory course in the methods of plant physiology such as measurements of H-ion concentration, osmotic quantities, permeability, enzyme activity, and the processes of transpiration, respiration, and photosynthesis. Conferences, readings, and laboratory work.

Not open to students who have credit for Botany 633.

730. Physiological Methods. Three credit hours. Autumn Quarter. Six laboratory hours each week. Prerequisite or concurrent, Botany 605-606. Mr. Bohning.

Methods of measuring physical factors of the environment that influence plant growth and development, under laboratory conditions. Methods of growing plants under controlled conditions for experimental work. Conferences, readings, and laboratory work.

Not open to students who have credit for Botany 632.

* Not given in 1957-1958.

734. Advanced Plant Physiology: Metabolism. Three credit hours. Autumn Quarter. Three lectures each week. Prerequisite, Botany 605-606 and Agricultural Biochemistry 601-609 or Organic Chemistry 647-648. Mr. Swanson, Mr. Platt.

Advanced study of selected topics, mainly photosynthesis, respiration, absorption and utilization of mineral salts, nitrogen, metabolism, and translocation.

735. Advanced Plant Physiology: Growth. Three credit hours. Spring Quarter. Three lectures each week. Prerequisite, Botany 605-606. Mr. Meyer.

The physiology of growth and reproduction. Special attention is given to the interrelated effects of internal and external factors on these processes.

Not open to students who have credit for Botany 634.

***737. Plant Cytology.** Three credit hours. Spring Quarter. Three two-hour laboratory periods each week. Prerequisite, Botany 605-606. Given in alternate years. Miss Lampe.

The colloidal nature and chemistry of cell organs in living and fixed conditions. Effect of various chemicals upon protoplasmic structure. Ontogeny, structure, divisions and fusions of plant cells. Chromosome structure and behavior; chromosome and gene mutations.

740. Cytogenetics. Three or five credit hours. Spring Quarter. Given in alternate years. Three recitations and two two-hour laboratory periods each week. Prerequisite, Botany 401-402, Zoology 403 or 603, and Zoology 618 or Botany 737. Mr. Paddock.

A study of chromosomal aberrations as to their origin, effects on chromosome morphology and behavior, effects on genetic ratios, transmissibility, and usefulness in practical breeding programs and in attacks on fundamental problems of cytogenetics.

***750. Ecological Methods.** Three credit hours. Spring Quarter. Given in alternate years. Two lecture-discussion hours and one two-hour laboratory or field period each week. Five full Saturdays of field work. Prerequisite, Botany 601, or equivalent. Mr. Wolfe.

Field practice in measuring edaphic and climatic factors in plant habitats; analysis of the date; methods of mapping vegetation; statistical analysis of vegetation; sources of climatic data; paleoecological techniques.

755. Principles of Plant Taxonomy. Five credit hours. Spring Quarter. Four two-hour laboratory-discussion periods each week. Prerequisite, Botany 406 and 614. Desirable antecedent, Botany 613. Given in alternate years. Miss Lampe.

A study of the evolutionary development of characters in the pteridophytes, gymnosperms and especially the angiosperms, together with a comparative study of the taxonomic systems which cover these groups. Emphasis is placed upon the basic philosophy underlying each system and the taxonomic principles involved.

Not open to students who have credit for Botany 645 and 646.

***760. History of Botany.** Three credit hours. Autumn Quarter. Given in alternate years. Prerequisite, Botany 401-402 and two additional Quarters of biological science. Mr. Waller.

A brief survey of the fundamental discoveries that have led to modern concepts in plant science.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

* Not given in 1957-1958.

BUSINESS ORGANIZATION

Offices, 352, 354 Hagerty Hall

PROFESSORS WEIDLER, BECKMAN, R. C. DAVIS, SMART, DEWEY, DONALDSON, JUCIUS, LEY, DAMERON, BARTELS, AND BICKLEY, ASSOCIATE PROFESSORS J. H. DAVIS, RIDDLE, CRAIG, TUTTLE, HICKS, DAVIDSON, MINER, QUANTIUS, ALLEN, CULLMAN, SMITH, STEELE, AND STONE, ASSISTANT PROFESSORS HOWELL, PFAHL, BONNER, MARLOWE, MOECKEL, SCHLENDER, HAUK, VELMAN, AND STOCKTON, INSTRUCTORS BUZZELL, CASEY, COURTNEY, COX, DODGE, AND FUSZARA; LECTURERS AND ASSISTANTS

401. Introduction to Business. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lecture, problem, and discussion hours each week. Open only to Freshmen and Sophomores. Mr. Miner and others.

This course is designed to introduce students to the field of business. A description of the functions and structure of modern business is presented and cases are introduced which give the student a background of information and help to prepare for advanced courses.

504. Business Communications. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507 and junior standing. Mr. Hicks, Mr. Jenkins, Mr. Cox, Mr. Casey.

Principles of writing in business letters and reports and internal communications. Selling, buying, collecting, adjusting, credit granting, etc., by mail.

520. Radio Station Management. Three credit hours. Winter Quarter. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507 and junior standard. Mr. Cullman.

Problems and procedures in the business management of radio stations. Station organization. Physical layout. Production department; programs, announcing, continuity, public relations. Sales department. Personnel. Station accounting. Small station problems. Legal requirements and limitations. Industry relations. New developments.

551. Personal Finance. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Donaldson, Mr. Pfahl.

A course in finance from the viewpoint of the individual. Deals with the principles and practices involved in buying on credit, borrowing money, saving money, bank relationships, buying government bonds, insurance, annuities, real estate, corporate bonds and stocks, and problems of taxation and wills.

Not open to students who have credit for or who are taking Business Organization 655.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

614. Business Statistics. Four credit hours. Winter Quarter. Three class meetings and one two-hour laboratory period each week. Prerequisite, Economics 522 or Social Administration 511. Mr. Tuttle.

Price and production indexes. Analysis of time series. Linear correlation applied to economic and business problems. The application of tabulating and other mechanical equipment to statistical problems will receive some attention.

621. Business Law: Contracts. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Craig, Mr. Marlowe, Mr. Howell, Mr. Velman, Mr. Ostberg.

A course in the law of contracts for the student of business, including the study of the fundamentals of legally binding agreements between persons, and their enforcement.

Not available for graduate credit for students majoring in Business Organization or Accounting.

623. Business Law: Agency, Sales, Property. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Business Organization 621. Mr. Marlowe, Mr. Howell, Mr. Velman, Mr. Ostberg.

A study of selected, fundamental principles in the subjects named, deemed important to the student of business.

Not available for graduate credit for students in Business Organization or Accounting.

625. Business Law: Negotiable Instruments. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Business Organization 621. Mr. Craig, Mr. Howell.

A course in the laws governing bills of exchange, promissory notes and checks designed to guide the business man in his daily transactions with such instruments.

640. Corporate Organization and Control. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 406 or 507. Mr. Stone, Mr. Donaldson.

Types of business enterprise; the corporation; rights, duties, obligations and liabilities of stockholders, directors and officers.

650. Corporation Finance. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507 and Accounting 402 or 405. Mr. Riddle, Mr. Pfahl, Mr. Stone.

Financial structure and problems of modern business corporations.

Not open to students who have credit for Economics 616.

700. Marketing. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Beckman, Mr. Bartels, Mr. Miner, Mr. Hauk, Mr. Buzzell.

A general but critical survey of the field of marketing. Consumer demand in relation to the marketing machinery. Functions, methods, policies, marketing costs, and problems of the farmer, manufacturer, wholesaler, commission merchant, broker, retailer, and other middlemen. Emphasis on principles, trends, and policies in relation to marketing efficiency.

709. Credits and Collections. Four credit hours. One Quarter. Autumn, Winter, Spring. Four class meetings each week. Prerequisite, Business Organization 700 and Accounting 402 or 405. Mr. Beckman, Mr. Miner, Mr. Bartels.

Nature, instruments, and place of credit in the economy. Management of consumer, mercantile, and bank credit. Analysis of credit risk. Management of collections. Credit control.

712. Sales Management. Four credit hours. One Quarter. Autumn, Winter, Spring Four class meetings each week. Prerequisite, Business Organization 700 and 676 and Accounting 402 or 405. Mr. J. H. Davis, Mr. Cullman, Mr. Hauk.

This course deals with the functions of the sales manager. Principal topics considered are: Sales organization; planning, quotas, and territories; selecting, training, and compensating salesmen; stimulation and supervision; and the use of cost data as a guide to the formulation of sales policies.

713. Salesmanship. Two credit hours. One Quarter. Autumn and Spring. Prerequisite, Business Organization 700. Mr. Bonner, Mr. Casey.

Effective selling technique. The psychological, economic, and marketing foundations of the sales activities which are the basis of the daily work of the salesman. The material considered is designed to be of value to students throughout the University as well as those majoring in marketing or commercial education.

Not available for graduate credit for students majoring in Business Organization.

716. Principles of Advertising. Four credit hours. One Quarter. Autumn, Winter, Spring. Four class meetings each week. Prerequisite, Business Organization 700. Mr. Moeckel, Mr. Cullman, Mr. Bartels.

A survey course treating advertising from the management viewpoint. Includes consideration of the advertising agency, advertising research, evaluation of media, principles of preparation of advertisements, and economic and social effects of advertising.

718. Broadcast Advertising Media. Three credit hours. Spring Quarter. Three class meetings each week. Prerequisite, Business Organization 716. Mr. Dameron, Mr. Cullman.

Broadcast media from the viewpoints of the advertiser and the station. Emphasis is given to the problems of choosing television and radio stations, times, and programs. Writing and evaluating commercials and continuity are included. The role of broadcasting institutions in the community is considered.

799. Special Problems in Business Organization. One to three credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, graduate standing or senior standing with a 2.5 point average in the field of specialization and permission of the instructor.

(h) Radio Advertising. Mr. Moeckel, Mr. Cullman.

CHEMICAL ENGINEERING

Offices, 180 McPherson Chemical Laboratory

PROFESSORS KOFFOLT, O'ROURKE, HERNDON, KAY, AND SYVERSON, ASSOCIATE PROFESSORS GEANKOPLIS, DRYDEN, SLIDER, AND E. E. SMITH, RESEARCH ASSOCIATE PROFESSOR KRUMIN, RESEARCH ASSISTANT PROFESSOR SHEETS, LECTURER CHRISTIANSEN, MR. FREEH, MR. JORDAN, MISS GOLUB, AND ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

680-681. Fundamentals of Chemical Engineering. Three credit hours. Winter and Spring Quarters. Three lectures and recitations each week. Prerequisite, one year of general chemistry, differential and integral calculus, and one year of college physics except with special permission of the instructor. Mr. Geankoplis, Mr. Golub.

A survey of the chemical engineering operations as distillation, drying, evaporation, absorption, adsorption, heat transfer, classification, etc. Fundamental chemical engineering process calculations pertaining to heat and energy balances, gas-vapor mixtures, etc.

Not open to students majoring in chemical engineering.

Elective for students in the College of Engineering, Agriculture, Arts, Education, and Graduate School.

691. Elements of Chemical Engineering. Three credit hours. Winter Quarter. Two lecture-recitation hours and one two-hour computational laboratory each week. Prerequisite, differential and integral calculus and one year of college physics, except with special permission of the instructor. Mr. Lapple, Mr. Syverson and assistants.

The beginning of a thorough discussion of the engineering operations utilized in the chemical branch of engineering with emphasis on the engineering requirements of the market and economics and of the process and their effect on the engineering used. The work of this course is concerned with graphical chemical engineering methods and the study of the behavior of liquids and gases statically, during compression and in flow. It is directed toward a study of the fundamental principles involved, the engineering equipment available and by means of numerous computational problems, the quantitative relationships most frequently encountered in chemical industry.

692. Elements of Chemical Engineering. Three credit hours. One Quarter. Autumn and Spring. Two lecture-recitation hours and one two-hour computational laboratory period each week. Prerequisite, differential and integral calculus and one year of college physics, except with special permission of the instructor. Mr. Freeh, Mr. E. E. Smith, Mr. Dryden, and assistants.

A continuation of the study of the chemical engineering operations. The work of this course covers the applications of the basic principles of heat transfer to equipment design and operation problems of chemical industry. It is integrated with fluid flow work of Chemical Engineering 691. Emphasis is laid on computational problem work.

693. Problems in Chemical Engineering Operations. Two to eight credit hours. One Quarter. Autumn, Winter, Spring. Conference, library, and laboratory work. Prerequisite or concurrent, Chemical Engineering 691 and 692. This course may be repeated for credit. Mr. Koffolt, Mr. Rebert, and assistants.

This course consists of individual or group conferences, library, and laboratory work dealing

with the fundamental chemical engineering operations. The work of the course stresses quantitative treatment of the application of physics, mathematics, and chemistry in the field of Chemical Engineering.

†741. **Chemical Engineering Operations Laboratory.** Four to eight credit hours. Chemical Engineering, Summer Quarter following the fourth year. Prerequisite, Chemical Engineering 720 and 740 or equivalent. Mr. Koffolt, Mr. Syverson, Mr. Rebert, and assistants.

The fundamental laboratory course in chemical engineering concurrent with a series of lecture conferences and problems on the theory of chemical engineering operations. Laboratory study and investigation of the operating characteristics and efficiency of equipment utilized in carrying out the more important chemical engineering operations, such as fluid flow, heat transfer, distillation, etc. Standard American Society for Testing Materials methods with standard equipment are also integrated in this course.

CHEMISTRY

Office, 116 McPherson Chemical Laboratory
General Chemistry Office, 115 McPherson Chemical Laboratory

PROFESSORS MOYER, WOLFROM, HENNE, NEWMAN, GARRETT, HASKINS, HARRIS, LASSETTRE, MacNEVIN, VERHOEK, AND SISLER, ASSOCIATE PROFESSORS CALEY, KURBATOV, MacWOOD, CALVERT, MALMBERG, RUBIN, SWEET, TAYLOR, VAN WINKLE, WATTERS, AND SCHECTER, NONRESIDENT ASSOCIATE PROFESSOR ROTHEMUND (KETTERING FOUNDATION, ANTIOCH COLLEGE), ASSISTANT PROFESSORS BUSCH, CAVA, COLLAT, DAVID WHITE, AND WILLIAM WHITE, AND ASSISTANTS

411. **General Chemistry.** Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures, one recitation, and two two-hour laboratory periods each week. Mr. Garrett, Mr. Haskins, Mr. Verhoek, Mr. MacWood, Mr. Rubin, Mr. Sisler, Mrs. Kurbatov, Mr. Calvert, and assistants.

A general course on the chemistry of the most important non-metals and the fundamental chemical principles. To be followed by Chemistry 412.

It is highly desirable that the student be well prepared in elementary mathematics including high school algebra.

412. **General Chemistry.** Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures, one recitation, and two two-hour laboratory periods each week. Prerequisite, Chemistry 411. Mr. Garrett, general chemistry staff, and assistants.

A continuation of Chemistry 411. The chemistry of non-metals is concluded and such topics as oxidation-reduction, chemical equilibrium, etc., are discussed, and the study of the metals is started. To be followed by Chemistry 413.

Students will be placed in the recitation and laboratory sections in accordance with their proficiency in Chemistry 411.

412-P. **General Chemistry.** Five credit hours. Autumn Quarter. Two lectures, one recitation, and two two-hour laboratory periods each week. An honors course for proficiency students granted Em credit in Chemistry 411. Mr. Garrett, general chemistry staff, and assistants.

The chemistry of the non-metals is studied and such topics as oxidation-reduction, chemical equilibrium, etc., are discussed. The study of the metals is started. To be followed by Chemistry 413-P.

413. **Qualitative Analysis.** Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures, one recitation, and two three-hour laboratory periods each week. Prerequisite, Chemistry 412. Mr. Garrett, general chemistry staff, and assistants.

A general course in the chemistry of the common metals and qualitative analysis, dealing with the systematic separation and identification of the cations and anions. It also includes the application of the ionization theory, mass action law, and the principles of chemical equilibrium to qualitative analysis.

Students will be placed in recitation and laboratory sections in accordance with their proficiency in Chemistry 412.

† Not given during the academic year, 1957-1958.

413-P. Qualitative Analysis. Five credit hours. Winter Quarter. Two lectures, one recitation, and two three-hour laboratory periods each week. Prerequisite, Chemistry 412-P. Mr. Garrett, Mr. Haskins, general chemistry staff, and assistants.

A general honors course in the chemistry of the common metals and qualitative analysis, dealing with the systematic separation and identification of the cations and anions. It also includes the application of the ionization theory, mass action law, and the principles of chemical equilibrium to qualitative analysis.

421-422-423. Quantitative Analysis. Three or four credit hours. Three Quarters. 421, Autumn and Winter; 422, Winter and Spring; and 423, Autumn and Spring. One recitation, one laboratory demonstration, and five to eight laboratory hours each week. Prerequisite, acceptable courses in general chemistry, including qualitative analysis. Mr. MacNevin, Mr. Moyer, Mr. Caley, Mr. Watters, Mr. Sweet, and assistants.

A general course in quantitative analysis. Chemistry 421 and 422 are devoted to gravimetric and volumetric analysis. Chemistry 423 is largely instrumental methods of analysis and includes colorimetric analysis, electrolytic precipitation, the determination of pH values and potentiometric titration. Students from different colleges or students having different interests may choose exercises to meet their particular needs.

(a) Students in chemical engineering, pre-medical, medical technology, and pharmacy curricula may take this course for three credit hours.

(b) Qualified students may also elect to take this course for four credit hours.

451-452. Organic Chemistry. Five credit hours. 451, Autumn and Spring; 452, Winter and Summer Quarters. Three lectures and two three-hour laboratory periods each week. Prerequisite, one year of general chemistry, including qualitative analysis. Mr. Wolfrom, Mr. Malmberg, and assistants.

A general introductory course in organic chemistry, including laboratory preparations, arranged for students preparing for Dentistry, Veterinary Medicine, Medical Technology, and Pharmacy.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

647-648. Organic Chemistry. Three credit hours each. Two Quarters. 647, Autumn and Spring; 648, Winter and Summer. Three lectures or recitations each week. Prerequisite, acceptable courses in general chemistry and Chemistry 421, 422, 423 or their equivalent. Arts-Medicine, Premedical, Pharmacy, and Education groups. Mr. Malmberg, Mr. Wolfrom.

A fundamental course in organic chemistry. Chemistry 647 is devoted to a discussion of the aliphatic hydrocarbons and their derivatives and Chemistry 648 to a discussion of the coal tar compounds.

Not available for graduate credit for students majoring in chemistry.

Not open to students who have credit for Chemistry 451-452.

649. Organic Chemistry: Laboratory. Three credit hours. One Quarter. Autumn and Spring. Nine laboratory hours each week. Prerequisite or concurrent, Chemistry 647. Mr. Wolfrom, Mr. Malmberg, and assistants.

The laboratory work naturally belonging with chemistry 647. The preparation of a series of typical organic compounds, their purification, and a study of their properties.

Not available for graduate credit for students majoring in chemistry.

Not open to students who have credit for Chemistry 451-452.

650. Organic Chemistry: Laboratory. Two or three credit hours. One Quarter. Winter and Summer. Nine laboratory hours each week. Prerequisite, Chemistry 649; prerequisite or concurrent, Chemistry 648. Mr. Malmberg, Mr. Wolfrom, and assistants.

A continuation of Chemistry 649.

Not available for graduate credit for students majoring in chemistry.

670. Physical Chemistry. Five credit hours. Spring Quarter. Five lectures each week. Prerequisite, Mathematics 418, Physics 413, or their equivalent, and ten Quarter hours of organic chemistry or its equivalent. Mr. Taylor.

A non-mathematical study of the fundamental principles of physical chemistry, arranged for students in the biological sciences or in other non-chemical fields.

Not available for graduate credit for students majoring in chemistry.

Not open to students who have credit for Chemistry 563.

681. Physical Chemistry. Three credit hours. Autumn Quarter. Three lectures each week. Prerequisite or concurrent, acceptable courses in organic chemistry, physics, and two Quarters of calculus. It is recommended that Chemistry 691 be taken concurrently with this course. Mr. Harris, Mr. Van Winkle.

The fundamental course in physical chemistry.

Not available for graduate credit for students majoring in chemistry.

682. Physical Chemistry. Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Chemistry 681. It is recommended that Chemistry 692 be taken concurrently. Mr. Harris, Mr. Van Winkle.

A continuation of Chemistry 681.

Not available for graduate credit for students majoring in chemistry.

683. Physical Chemistry. Three credit hours. One Quarter. Autumn and Spring. Three lectures each week. Prerequisite, Chemistry 682. It is recommended that Chemistry 693 be taken concurrently. Mr. Van Winkle, Mr. Taylor.

A continuation of Chemistry 682.

Not available for graduate credit for students majoring in chemistry.

691-692-693. Physical Chemistry: Laboratory. Two credit hours. Autumn, Winter, and Spring Quarters. Six laboratory hours each week. Prerequisite or concurrent, an acceptable course in physical chemistry. These courses are designed to accompany Chemistry 681, 682, and 683, respectively. Mr. D. White, and assistants.

Quantitative measurements of phenomena of chemical interest and the application of chemical principles to their interpretation. The measurements include experiments in the determination of molecular weights and chemical constitution, thermochemistry, reaction rates, equilibria, electrochemistry, colloid chemistry, high vacuum and glass blowing techniques, etc.

795. Colloid Chemistry. Three credit hours. Winter Quarter. Three lectures or recitations each week. Prerequisite, acceptable courses in physical chemistry or their equivalent. Mr. Van Winkle.

A fundamental course in colloid chemistry.

CIVIL ENGINEERING

Office, 107 Brown Hall

PROFESSORS GRAY, KARRER, LARGE, AND VANDERGRIFT, ASSOCIATE PROFESSORS BAKER, COSENS, AND SMITH, ASSISTANT PROFESSORS MOULTON AND PURTZ, MR. CRAIG

401. Plane Surveying I. Five credit hours. One Quarter. Autumn and Winter. Four recitations and one three-hour laboratory period each week. Prerequisite, Mathematics 421 and 422. Mr. Craig, Mr. Purtz, Mr. Gray, Mr. Moulton. Mr. Wall.

Surveying instrument familiarization. Land surveying. Leveling and profiles. Computation of areas. Topographic mapping.

402. Photogrammetry. Two credit hours. One Quarter. Winter and Spring. One recitation and one two-hour laboratory period each week. Prerequisite, Civil Engineering 401 and 413. Mr. Purtz, Mr. Craig.

Phototopography and planimetry from air photographs.

CONSERVATION

401. Introduction to Conservation of Basic Natural Resources. Three credit hours. One Quarter. Autumn and Spring. Three lecture and discussion hours each week. Mr. Johnson, Mr. Good.

An orientation course designed for all students interested in the broad concepts of conservation and in the interrelations of the technical, economic, social, and political aspects of conservation with human life and activities. The reasons for public concern with the conservation and improvement of soil, water, plant and animal life, forest and mineral resources and in wildlife will be studied. This course offers a general introduction to the field of conservation rather than specialized or professional training. One or more extended field trips will be taken.

514. Conservation Agencies and Relations. Three credit hours. Winter Quarter. Three discussions each week. Mr. Johnson.

A course on progress, problem agencies, and vocational opportunities in conservation. Representatives of governmental agencies, private organizations, and university departments present programs and problems in their areae of conservation work.

Not open to students who have credit for Conservation 511-512-513.

561. Field Experiences in Conservation. Five credit hours. Ten weeks practical experience or its equivalent including a written report in conservation activities to be completed prior to the senior year. Staff.

An attempt will be made by the advisers to arrange for definite experiences in conservation activities. Selection of the activity is to be approved by the adviser and a suitable written report submitted to the adviser within one month after the completion of this practical experience.

DAIRY SCIENCE
Office, 304 Plumb Hall

PROFESSORS ELY, GILMORE, LUDWICK, AND SUTTON, ASSOCIATE PROFESSORS BRAKEL, E. F. BAUMER, MR. KAESER, MR. FECHHEIMER, MR. BARR

Dairy Science majors are urged to discuss their background and farm experience with their adviser. The staff of the department will assist the student in planning to acquire such experience as may be valuable to him.

401. Fundamentals of Dairy Science. Five credit hours. One Quarter. Autumn and Winter. Three lecture and two two-hour laboratory periods each week. Mr. Barr, Mr. Ely, Mr. Kaeser.

A general survey of the production phases of the dairy industry. The place of dairying among other farm enterprises nationally and in Ohio. The course includes a brief review of the dairy breeds, breeding and selection, production factors which affect the composition, quality, and food value of milk and other farm dairy problems.

Not open to students who have credit for Dairy Science 501 or 512.

501. Dairy Cattle Production. Five credit hours. One Quarter. Autumn and Spring. Three lecture and two two-hour laboratory periods each week. Prerequisite, Animal Science 402. Designed for Agricultural Education majors. Mr. Brakel.

Emphasis is placed on problems encountered by teachers of Vocational Agriculture and Agricultural Extension workers. The selection, feeding, breeding, and management of dairy cattle, herd health, quality milk production, fitting and showing of cattle are included.

Not open to students who have credit for Dairy Science 401 or 512.

502. Dairy Cattle Feeding. Three credit hours. One Quarter. Autumn and Winter. Three lecture periods each week. Prerequisite, Animal Science 402. Mr. Brakel.

Feeding practices and selection of feeds for economical milk production. Calf feeding, effect of feed on herd health and on the nutritive value of milk.

504. Dairy Herd Management. Five credit hours. Winter Quarter. Three lecture and two two-hour laboratory periods each week. Prerequisite, Animal Science 402. Mr. Brakel.

Problems and practices concerned with efficient production of milk and successful operation of a dairy herd. Foundation animals, calf raising, housing, equipment, herd health, milk quality and merchandising cattle.

507. Dairy Cattle Selection and Judging. Three credit hours. Spring Quarter. One two-hour and one four-hour laboratory period each week. Prerequisite, Dairy Science 401 and one year of biological science. Mr. Kaeser, Mr. Ely.

A wide experience is afforded students in the selection of cattle of the various dairy breeds. Breed type studies and comparative judging and classification occupy a major portion of the time. New breed standards of excellence and their interpretation are stressed in analyzing the worthiness of leading herds as they are visited.

512. Milk Production. Five credit hours. Spring Quarter. Three lecture and two two-hour laboratory periods each week. Prerequisite, Agricultural Biochemistry 410. Mr. Barr.

A course designed to give a broad scope of the dairy husbandry field with special emphasis on selection of breeding animals, feeding and management, herd health and quality milk production and their application to the farmers' problems. This course is planned for students not majoring in Agricultural Education or Dairy Science.

Not open to students who have credit for Dairy Science 401 or 501.

520. Animal Breeding. Five credit hours. Autumn Quarter. Five one-hour lecture-discussion periods each week. Prerequisites, Zoology 403 and Dairy Science 401 or Animal Science 401. Mr. Fechheimer.

Information needed to understand the methods used in the improvement of livestock on an individual and herd or flock basis.

NOTE: FOR LIVESTOCK FEEDING AND NUTRITION COURSES—See Animal Science 402 and Animal Science 618. These courses will count toward a major in Dairy Science.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

610. Physiology of Growth and Milk Secretion. Three credit hours. Autumn Quarter. Two lectures and one laboratory period each week. Prerequisite, Veterinary Physiology 416 and 417 or their equivalent, or permission of the instructor. Mr. Ludwick.

Hormone function and its influence on growth and milk secretion. Growth and its relationship to performance. The physiological processes involved in the synthesis and ejection of milk.

612. Physiology of Reproduction and Artificial Insemination. Three credit hours. Spring Quarter. Two three-hour lecture, laboratory periods each week. Prerequisite, Veterinary Physiology 416 and 417 or their equivalent. Mr. Ludwick.

The anatomy and physiology of the reproductive organs of the male and female; reproduction abnormalities and causes of reproductive inefficiency. History and development of artificial breeding, organization, and operation of the service, techniques in collecting, diluting, evaluating, and processing of semen.

620. Livestock Genetics. Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Zoology 403, Dairy Science 401 or Animal Science 401, and Dairy Science 420 is a suggested prerequisite. Mr. Fechheimer.

Genetic principles as they apply to systems of livestock improvement, growth, and development, milk production, efficiency of feed utilization, type, reproductive efficiency, prolificacy, lethals, disease resistance, blood antigens, and coat color.

This course will count toward a major in Animal Science.

Not open to students who have received credit in Dairy Science 511.

626. Marketing of Dairy Products (also Agricultural Economics 626). Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Agricultural Economics 613. Mr. Baumer.

A study of the principles of assembling, transporting, selling, pricing, distribution, marketing costs and margins for dairy products.

701. Special Problems. Two or five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, written permission of the instructor. The staff.

Special assignments in the advanced phases of dairy husbandry problems. Students will elect work in desired subjects after conference with the instructor in charge.

714. Research Methods and Techniques. Five credit hours. Autumn Quarter. Three lectures and one four-hour laboratory period each week. Prerequisite, twenty hours in Animal Science and Dairy Science courses and written permission of instructor in charge. Mr. Gilmore.

A course which surveys and analyzes research work in the fields of Dairy and Animal Husbandry at leading research centers. Experimental procedures in management, nutrition, performance, reproduction, and breeding are examined by the students. Detailed practice is given in abstracting literature and in preparing bibliographies, taking measurements, analysis of experimental data, and the preparation of reports.

Not open to students who have credit for Animal Husbandry 614 or 714.

720. Advanced Dairy Cattle Breeding. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Dairy Science 520 or equivalent and permission of the instructor. Mr. Ludwick.

Measures of performance in dairy cattle, useful statistical interpretation, problems in herd analyses and evaluations, and modern sire selection.

Not open to students who have received credit in Dairy Science 611.

DAIRY TECHNOLOGY

Office, 122 Agricultural Laboratories Building

PROFESSOR GOULD, ASSOCIATE PROFESSORS HANKINSON AND SLATTER, ASSISTANT PROFESSORS ARMSTRONG, HARMAN, HARPER, AND KRISTOFFERSEN, MR. HARTLEY AND MR. SEIBERLING AND ASSISTANTS

Students majoring in Dairy Technology will be required to work in dairy plants for two periods of a minimum of ten weeks each for which they receive credit for five hours for each period and pay for their services. It is recommended that this requirement be met during the summers following the freshman and sophomore years.

401. Principles of Dairy Technology. Three credit hours. One Quarter. Autumn, Winter, Spring. Two discussion periods and one two-hour laboratory period each week. Mr. Gould, Mr. Seiberling.

A general survey course of the dairy products industry dealing with composition, properties, production and distribution of market milk, ice cream, butter, cheese, and other dairy products. Introduction of certain practical methods of analysis such as the Babcock test is included.

415. Dairy Plant Experience. Five credit hours. One Quarter. Autumn, Winter, Spring. Ten weeks practical experience or its equivalent in an approved dairy processing plant. Written reports covering this work are required. Credit toward graduation will be limited to students completing the curriculum in Dairy Technology. Mr. Gould, Mr. Harman.

503. Testing of Dairy Products. Five credit hours. Winter Quarter. Three discussion periods and two three-hour laboratory periods each week. Prerequisite, Dairy Technology 401, Agricultural Biochemistry 410 and 411 prerequisite or concurrent, and sophomore standing. Mr. Gould, Mr. Harman.

The course will deal with dairy plant methods of sampling and testing of milk and its products. Discussions will emphasize composition and legal standards; sampling and testing techniques and their application from the theoretical and practical standpoints; the function of a laboratory in a modern dairy organization.

Not open to students who have credit for Dairy Technology 403.

505. Butter Industry. Three credit hours. Spring Quarter. Two discussion periods and one three-hour laboratory period each week. Prerequisite, Dairy Technology 503. Mr. Slatter.

This course covers the history and development of the butter industry, the procurement and processing of cream, the manufacture, quality control and marketing of butter. Principles of chemistry, physics and bacteriology are stressed.

Not open to students who have credit for Dairy Technology 405.

511. Dairy Refrigeration. Five credit hours. Spring Quarter. Five discussion periods each week. Prerequisite, Dairy Technology 503, Engineering Drawing 400, and Physics 411 and 412. Mr. Seiberling.

This course embraces concepts of heat transfer, elementary thermodynamics of refrigeration systems and applications of refrigeration equipment to dairy processing. Dairy heat exchangers are studied.

515. Dairy Plant Experience. Five credit hours. One Quarter. Autumn, Winter, Spring. Ten weeks practical experience or its equivalent in an approved dairy processing plant. Written reports covering this work are required. Credit toward graduation will be limited to students completing the curriculum in Dairy Technology. Mr. Gould, Mr. Harman.

520. Grading of Dairy Products. Three credit hours. Spring Quarter. One lecture and two two-hour laboratory periods each week. Mr. Slatter.

A course covering the commercial grading and judging of milk and milk products, with discussions and practice pertaining to the fundamentals of taste and odor perception; evaluation of defects in dairy products; consumer grades; determination of consumer preference.

Not open to students who have credit for Dairy Technology 615.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

605. Management of Dairy Plants. Five credit hours. Winter Quarter. Five discussion periods each week. Prerequisite, Dairy Technology 607 and 610. Mr. Gould, Mr. Slatter.

Discussions will deal with plant management problems of dairy processing and manufacturing organizations; operational and business practices; plant efficiencies including waste conservation and disposal and water treatment; record keeping and interpretation; sanitation and good housekeeping; personnel employment and management; sales and distribution.

606. Dairy Plant Equipment and Buildings. Three credit hours. Autumn Quarter. Three class meetings each week. Prerequisite, Dairy Technology 511, Physics 411 and 412, Agricultural Engineering 510. Mr. Seiberling.

Principles of construction, operation and maintenance of dairy and food processing equipment. Engineering fundamentals will be stressed and attention given to process control, materials handling, plant design and construction.

Not open for graduate credit.

607. Market Milk. Five credit hours. Winter Quarter. Three discussion periods and two three-hour laboratory periods each week. Prerequisite, Dairy Technology 503, Bacteriology 610, 611. It is also desirable that students taking this course should have credit for dairy chemistry. Mr. Hankinson.

The course deals with the fluid milk industry, including processing and distribution of milk and cream for city trade. Considerable attention will be given to plant operations and problems pertaining thereto. The laboratory work will consist of the application of bacteriology and chemistry to the production of quality products. Training and practice will be given in milk inspection from the standpoint of the Board of Health and the city milk plant.

609. Concentrated Milk Products. Three credit hours. Spring Quarter. Two discussion periods and one three-hour laboratory period each week. Prerequisite, Dairy Technology 607. Mr. Harman.

This is a comprehensive study of condensed, evaporated and powdered milk and milk products. Chemical and physical properties, manufacturing methods, and utilization of concentrated products are presented in lecture and laboratory. Laboratory time will be devoted to manufacturing practices.

610. Ice Cream Industry. Five credit hours. Autumn Quarter. Three discussion periods and two three-hour laboratory periods each week. Prerequisite, Dairy Technology 607, 609. Mr. Harman.

This course deals with the modern ice cream industry. Discussions and laboratory studies will deal principally with the technical aspects of commercial manufacturing methods and quality control. Limited attention will be given to problems of sales and distribution.

620. Cheese Industry. Three credit hours. Autumn Quarter. Three discussion periods each week. Prerequisite, Dairy Technology 607, Bacteriology 610 and 611. Mr. Slatter.

A study of commercial methods of manufacturing Cheddar, Colby, Swiss, Brick, Cottage, and Cream cheese. Emphasis will be placed on the application of chemistry and bacteriology. Attention will be given to current fundamental research in the cheese field.

621. Cheese Industry. Three credit hours. Autumn Quarter. One seven-hour laboratory period each week. Prerequisite or concurrent, Dairy Technology 620. Mr. Slatter.

Practical experience will be given in the manufacture of the most common varieties of hard and soft cheese with special reference to physical, chemical, and bacteriological factors affecting quality; propagation and care of starters; and determination of cheese composition.

651. Junior Seminar. One credit hour. Autumn Quarter. One discussion period each week. Prerequisite, Dairy Technology 607 and senior standing in Dairy Technology. Mr. Harper.

A historical review of research literature in dairy technology with emphasis on the preparation and presentation of technical abstracts and papers. Experience in writing technical papers and in presenting technical subject matter before a critical audience will be given.

Not open for graduate credit to students in Dairy Technology.

652. Junior Seminar. One credit hour. Winter Quarter. One discussion period each week. Prerequisite, Dairy Technology 651. Mr. Gould.

A continuation of Dairy Technology 651. Emphasis will be placed on current research problems in Dairy Technology. Attention will be given to leading research workers in dairy technology and their contributions. The role of research in the dairy industry will be stressed.

Not open for graduate credit for students in Dairy Technology

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. One hour conference each week. Prerequisite, at least senior standing in dairy technology or its equivalent and permission of the department adviser. Staff.

This course is designed for students majoring in dairy technology and consists in working out special problems along the lines in which they are specializing.

710. Technical Control of Dairy Products. Three credit hours. Autumn Quarter. Three discussion periods each week. Prerequisite, Dairy Technology 607, 610, Agricultural Biochemistry 603, or graduate standing in dairy technology. Mr. Gould.

Attention is given to the application of technical control methods to dairy plant operations and to the interpretation of laboratory findings. Chemical and bacteriological techniques are reviewed with emphasis being placed on their use in solving dairy plant problems.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

DRAWING

(See Engineering Drawing)

ECONOMICS

Office, 239 Hagerty Hall

PROFESSORS BOWERS, SMART, JAMES, HERBST, PATTON, AND DEWEY, ASSOCIATE PROFESSORS HARRISON, LOVENSTEIN, MILLER, COONS, TUTTLE, PARNES, QUANTIUS, CONDOIDE, SMITH, LYNN, KELLEY, AND BICKLEY, ASSISTANT PROFESSORS STEVENS, LYNN, OSTER, ATHEARN, CRAIG, TYBOUT, COCHRAN, AND GALLMAN

401-402. Principles of Economics. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Five class meetings each week. Not open to Freshmen. Mr. James, Mr. Lovenstein, Mr. Coons, and others.

A study of the organization and operation of our economic system, with the objective of developing an intelligent understanding of our present economic problems. Among the subjects studied are cost and price relationships; money and banking; taxation; labor problems; agricultural economics; international trade and finance and public control of business activity.

NOTE: Freshmen with a cumulative point-hour ratio of 3.0 or above on their first two Quarters of work may enroll for this course in their third Quarter in residence, if they have already secured credit for Economics 400 and Business Organization 401.

403-404. Principles of Economics for Engineers. Three credit hours. Two Quarters. Both 403 and 404 are given Autumn, Winter, and Spring. Three class meetings each week. Not open to Freshmen. Mr. Bowers, Mr. Athearn, Mr. Tybout.

Economic theory and business practice from the viewpoint and according to the needs of engineering students. Discussions of consumption; business developments; operating units and cost problems in production; domestic and foreign marketing and finance; price determination; wages, salaries, and labor problems; investments and insurance; work hazards, price trends, business cycles, and regulation of business activity; socialism and economic planning; taxation.

Not open to students who have credit for Economics 401-402.

406. Outlines of Economics. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Not open to Freshmen. Mr. Harrison, Mr. Athearn, others.

An analysis and description of the basic characteristics of our economic system; a study of the significant problems arising in its operation and an appraisal of their proposed solutions.

Not open to students who have credit for Economics 401-402.

510. Problems of Labor. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Miller, Mr. Parnes, Mr. Keig.

A survey of the problems of the American wage earner and of the principal methods used by workers, employers, and government in dealing with these problems.

Not open to students who have credit for Economics 641.

515. International Economic Relations. Three credit hours. Autumn Quarter. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Not open to students with a major in International Trade. Mr. Coons.

A survey of the field of international economic relations, including an explanation of the basis for world trade, the adjustment of international accounts, capital movements, commercial and financial policy, particularly of the United States, and recent international economic organizations.

520. Money and Banking. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Lovenstein, Mr. Stevens, Miss Quantius, Mr. Gallman.

This course is intended as an introductory study to the more technical courses in banking and finance and also to give a comprehensive view of the field for those who are primarily interested in other subjects. The organization, operation, and economic significance of our monetary and banking institutions are discussed, with special reference to current conditions and problems.

522. Elementary Economic Statistics. Four credit hours. One Quarter. Autumn, Winter, Spring. Three lectures and one two-hour laboratory period each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Smart, Mr. Tuttle, Mr. Ervin.

Collection of primary statistical data. Primary and secondary sources. Tabular and graphic presentation. Ratios. The frequency distribution. The partition values and measures of location, dispersion, skewness and kurtosis. Sampling. Tests of significance. Analysis of time series with special emphasis on index numbers. Simple rectilinear correlation.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

618. Transportation Economics. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Dewey, Mr. Tybout.

A general survey of the history and regulation of inland transportation agencies, and a discussion of current problems of transportation and regulation, for students with a general interest in the field of economics as well as for those with a special interest in transportation.

Not open to students who have credit for Economics 692-693.

624. Principles of Insurance. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507. Mr. Bowers, Mr. Bickley, Mr. Athearn, Mr. Lynn, Mr. Ervin.

A study of the theory and practice of the principal types of insurance in the life, fire, and casualty fields. The economic theory of risk; loss prevention; state supervision, etc.

627. Analysis and Control of Business Fluctuations. Three credit hours. Spring Quarter. Prerequisite, Economics 402, 404 or 406 and 520 or 507 and 520. Mr. Dewey, Mr. Coons.

A study of changes in levels of income and prices. Current and past theories of the business cycle. Analysis of public policy proposals for controlling economic fluctuations.

656. National Income Analysis. Three credit hours. Autumn Quarter. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507, and Economics 522. Mr. Coons.

A study of the technique, source of information, and methods of testing and verification involved in Social Accounting; analysis of procedures used by the Department of Commerce in its estimates of Gross National Product and National Income.

660. Population. Three credit hours. Autumn Quarter. Three class meetings each week. Prerequisite, Economics 402 or 404 or 406 or 507; or the equivalent of one of these, with the permission of the instructor. Mr. Harrison.

The growth and distribution of population. The relation of numbers to resources, productive capacity, standard of living, prosperity, and international economic problems. The dynamic aspects of population in relation to material and moral progress. Critical consideration of population theories and policies.

EDUCATION

Office, 120 Arps Hall

PROFESSOR FAWCETT AND STAFF

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Radio and Television in Education. Three credit hours. Autumn Quarter. Prerequisite, senior standing. Mr. Tyler.

The role of radio and television in the education of both adults and children, in and out of school. Educational objectives in broadcasting, and the planning, production, utilization, and evaluation of programs will be considered. Opportunities for observation and individual problems.

†682. Field Laboratory in Conservation Education. Six to eight credit hours. Prerequisite, a minimum of 110 Quarter hours of which twenty hours must be in Education, including Education 684 or equivalent, or enrollment in the Conservation Curriculum of the College of Agriculture.

This course is designed primarily for teachers in the elementary and secondary schools and is conducted from Camp Muskingum near New Philadelphia, Ohio. It will employ the entire time of the student. Field trips, laboratory demonstrations, group discussions, and lectures concerning the subject-matter, curriculum, and methods of teaching in the fields of conservation of soil, water, plant life, wild life, and other resources, will be conducted.

† Not given during the academic year, 1957-1958.

ENGINEERING DRAWING

Office, 218 Brown Hall

PROFESSORS PAFFENBARGER, JONES, COOPER, VIERCK, AND SHUPE, ASSOCIATE PROFESSORS MACHOVINA, PHILBY, AND WATKINS, ASSISTANT PROFESSORS KEARNS, REED, PARKINSON, HANG, AND YARRINGTON, INSTRUCTORS AND ASSISTANTS

400. Elementary Engineering Drawing. Four credit hours. One Quarter. Autumn, Winter, Spring. One lecture and four two-hour laboratory periods each week. Elective in all curricula except engineering. Mr. Philby, supervisor.

Lettering, use of instruments, applied geometry, projection drawing, size description and pictorial representation.

Not open to majors in the College of Engineering.

401. Principles of Engineering Drawing. Four credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour periods of lecture and laboratory each week.

Lettering, use of instruments, applied geometry, orthographic projection, sections, rotation, pictorial drawing, auxiliary and oblique views, sketching. Not open to students who have credit for Engineering Drawing 400.

402. Principles of Engineering Drawing. Four credit hours. One Quarter. Winter and Spring. One lecture and four two-hour laboratory periods each week. Prerequisite, Engineering Drawing 400 or 401. Mr. Reed.

Lettering, auxiliary, development of surfaces, dimensioning, elementary working drawings, charts and graphs.

403. Principles of Engineering Drawing. Four credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour periods each week for lecture and laboratory. Prerequisite, Engineering Drawing 401. Mr. Shupe, supervisor.

Orthographic solutions to space problems including intersections, developments and vectors. Charts, graphs, and diagrams.

405. Principles of Engineering Drawing. Four credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour periods each week for lecture and laboratory. Prerequisite, Engineering Drawing 403. Mr. Machovina, Supervisor.

Graphical solutions involving scales, empirical and derived curves; slide rule; dimensioning; threads; fasteners; working drawings including special types; technical sketching.

416. Elements of Drawing and Lettering. Two credit hours. Winter Quarter. Six laboratory hours each week. No prerequisite. Mr. Philby.

Instruction in single stroke commercial gothic, inclined, display lettering and layout.

431. Principles of Graphic Representation. Four credit hours. Winter Quarter. One lecture, four two-hour laboratory periods, and three hours of preparation each week. Mr. Paffenbarger.

Applied geometry, shape and size description, lettering, pictorial drawing, sketching, maps, charts, and diagrams.

638. House Planning. Three credit hours. Spring Quarter. Two two-hour class periods and two hours to be arranged each week. Prerequisites, Home Economics 450, 506, 512, 560, 622, and 623 and junior standing or permission of the instructor.

Application of architectural design principles to house planning. Reading architectural drawings and specifications. Judging houses under construction and completed houses.

ENGINEERING MECHANICS
Office, 208 Industrial Engineering Building

PROFESSORS WEST, FOLK, AND POWELL, ASSOCIATE PROFESSORS CLARK, TUCKER, AND GRAHAM, MR. NIEDENFUHR, MR. GOODSTEIN, MR. LAMBERT, MR. LEISSA, MR. CHIN

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

521. Statics. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite or concurrent, Mathematics 543. Mr. Goodstein and others.

Resultant and equilibrium of concurrent and non-current coplanar force systems by algebraical and graphical methods; connected bodies; simple trusses; frames involving three-force members; flexible cables; friction; equilibrium of non-concurrent non-coplanar force systems; center of gravity and moment of inertia of masses and plane areas by integral calculus.

Not open to students who have credit for Engineering Mechanics 601.

602. Strength of Materials I. Five credit hours. One Quarter. Autumn, Winter, Spring. Four recitations, one two-hour laboratory period each week. Prerequisite, Engineering Mechanics 521. Mr. Folk and others.

Tensile, compressive and shearing stresses and deformations; allowable working stresses; combined stress by Mohr's circle; stresses beyond the elastic limit; analysis of axial forces on riveted and welded joints; torsion; bending and longitudinal shearing stresses and deformations in beams; deflection of beams by double integration; column theory and analysis of working column formulas.

607. Dynamics. Three credit hours. One Quarter. Autumn, Winter, Spring. Three recitations each week. Prerequisite, Engineering Machanics 521. Mr. Graham.

Dynamics of linear and angular motion from constant forces and forces proportional to displacement; connected bodies; impulse and momentum; combined rotation and translation; work, energy and power; rotating and accelerated frames of reference.

Not open to students who have credit for Mechanics 617.

ENGLISH
Office, 115 Derby Hall

PROFESSORS ESTRICH, FULLINGTON, BECK (EMERITUS), PERCIVAL (EMERITUS), WALLEY, WILSON, DERBY, CHARVAT, SIMPSON, UTLEY, ALTICK, BLOOMFIELD, AND PEARCE, ASSOCIATE PROFESSORS SNOW, HUGHEY, LOGAN, ELLIOTT, AND ROBBINS, ASSISTANT PROFESSORS CRAIG (EMERITUS), DUMBLE, WHITMER, VARANDYAN, HABER, KANE, BLICKLE, FURNISS, SHEDD, WHEELER, WRIGHT, BABB, AND FERGUSON, MISS HARTLEY, MR. KUHN, MR. NEWMARK, MRS. ROBINSON, MR. ZANGER, MISS DIAMOND, MR. HAZELTON, MR. HOWARD, MR. HOVDE, MR. MAURER, MRS. DASHER, MRS. LORD, MR. HART, MR. BRANDT, MR. MARKELS, MR. SILVER, MR. ALBAUGH, ASSISTANT INSTRUCTORS, ASSISTANTS AND GRADUATE ASSISTANTS

REVIEW COURSE IN ENGLISH COMPOSITION

Preceding the first two class sessions in English 416, tests will be given to determine the ability of students to use the English language effectively. Students with less than expected ability will be dropped from the regular classes and assigned to English 400, a review course in English fundamentals, for one Quarter. An additional fee will be charged for review course English 400.

400. Review of the Elements of Composition. Three credit hours. One Quarter. Autumn, Winter, Spring. Three credit hours will be added to graduation requirements. Director, Mr. Robbins.

A review of functional grammar and the elementary principles of written composition; practice in writing.

This course is designed for students who are not adequately prepared to undertake the work of English 416. Students may be assigned to the course because of unsatisfactory performance in the placement test or because of inability to maintain a satisfactory standard in English 416. This course may not be taken concurrently with English 416.

406-407-408. English as a Foreign Language. A sequence of courses designed to train foreign students in the use of written and oral English. To be taken in conjunction with Speech 405. Assignment to both Speech and the appropriate English course is made on the basis of examinations given at the beginning of each Quarter, to all new students whose native language is not English. Course credit may not be counted toward graduation. Director, Mr. Newmark.

406. General English for Foreign Students. Five credit hours. One Quarter. Autumn, Winter, Spring.

Review of English structure for foreign students. Proceeds from basic oral-aural patterns to their application in writing.

407. Advanced English for Foreign Students. Five credit hours. One Quarter. Autumn, Winter, Spring.

Develops academic and social effectiveness in the use of advanced patterns in written and spoken English.

408. Special Problems in English for Foreign Students. Three credit hours. One Quarter. Autumn, Winter, Spring.

Individual and class attention is given to the special academic problems of foreign students. Note-taking, examination taking, thesis and report writing, special vocabularies, etc. are given individual attention as needed.

416. Composition and Reading. Three credit hours. One Quarter. Autumn, Winter, Spring. Director, Mr. Robbins.

Guided training in expository writing with an emphasis on fundamentals of paragraphing, sentence structures, and mechanics, as illustrated in the student's own writing and in the essays of professional writers.

Not open to students who have credit for English 401, 402, 403, 410, 411, 412, 413, 414, 430, 505, 506, 507, 508.

417. Composition and Reading. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, English 416 or 410. Director, Mr. Robbins.

Guided training in expository writing with continued emphasis on fundamentals, approached specifically through a study of the techniques of critical reading.

Not open to students who have credit for English 401, 402, 403, 411, 412, 413, 414, 430, 505, 506, 507, 508.

418. Composition and Reading. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, English 417 or 411. Director, Mr. Robbins.

Guided training in expository writing: a continuation of English 416 and 417, approached specifically through the study of imaginative literature.

Not open to students who have credit for English 401, 402, 403, 412, 414, 430, 505, 506, 507. 508.

PREREQUISITES FOR "500" COURSE

Unless otherwise indicated, the prerequisites for "500" courses are English 401 and 430 or 418 or 412.

501. Readings in Recent Drama. Three credit hours. Winter Quarter. Mr. Dumble.

Wide reading in American and European plays since 1920. Lecture and discussion.

Not open to students who have credit for English 670.

502. Readings in Recent Prose Fiction. Three credit hours. One Quarter. Autumn and Spring. Mr. Dumble.

Wide reading with particular attention to the novel. Lecture and discussion.

505. Informative Writing. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, junior standing and English 401 and 430, 412 or 418, or the equivalent. Director, Mr. Robbins.

Guided training in the craft of effective and mature informational writing.

510. Introduction to American Literature I. Three credit hours. One Quarter. Autumn, Winter, Spring. Miss Whitmer, Mr. Zanger, Mr. Pearce, Mr. Hovde, Mr. Charvat, Mr. Simpson, Mr. Markels.

A critical survey of major writers and movements from the beginning to about 1870, with emphasis upon Poe, Emerson, Hawthorne, Melville, Thoreau, and Whitman.

Not open to students who have credit for English 609, 610.

511. Introduction to American Literature II. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, English 510. Mr. Hovde, Mr. Zanger, Miss Whitmer.

A critical survey of major writers and movements from about 1870 to the present, with emphasis upon Twain, James, and leading twentieth century writers.

Not open to students who have credit for English 609, 610.

519. The Professional Report. Three credit hours. One Quarter. Autumn, Winter, Spring. Two hours lecture and one hour conference each week. Prerequisite, junior standing. Mrs. Blickle and staff.

Training in practical writing for industry, business, and research, with emphasis on the special requirements and techniques of the professional report.

529. The English Bible. Five credit hours. Winter Quarter. Mr. Fullington.

A study of the King James version of the Bible as a masterpiece of world literature and an English classic. A brief survey of the English translations, their place and influence in English literature; a careful consideration of the narrative, prophetic, and poetic books of the Old and New Testaments viewed as literature.

540. Masters of Modern Literature. Five credit hours. One Quarter. Autumn, Winter, Spring. Mr. Derby, Mr. Snow, Miss Diamond, Mr. Utley.

An introduction to modern poetry, drama, and fiction through the study of five or six of the following authors as artists and thinkers: Shaw, O'Neill, MacLeish, Frost, Galsworthy, Conrad, Mann, T. S. Elliot, E. A. Robinson, Yeats, Porter, Hemingway.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

642. The Victorian Age. Five credit hours. One Quarter. Winter and Spring. Mr. Altick, Mr. Townsend.

The spirit and temper of the Victorian period as seen in the work of such poets as Tennyson, Browning and Arnold, and representative cases of the great social critics.

ENTOMOLOGY

(See Zoology and Entomology)

FARM CROPS

(See Agronomy)

FINE AND APPLIED ARTS

Office, 104 Hayes Hall

PROFESSOR SEVERINO AND STAFF

401. Introduction to Fine Art Activities. Three credit hours. One Quarter. Autumn, Winter, Spring. Four one-hour laboratory periods and one lecture each week.

An introduction through participation to the principles of visual organization that underlie all art. Experimentation with drawing, painting, and tri-dimensional design. Since the emphasis is upon the art process rather than upon the finished product, prior training is not prerequisite. Lectures, discussion, and reading supplement the laboratory experience.

Not open to students who have credit for Fine Arts 421.

402. Freehand Drawing. Three credit hours. Spring Quarter. Three two-hour laboratory periods weekly or two three-hour laboratory periods weekly. Prerequisite, Fine Arts 401.

Continued practice through a variety of media in the use of visual form principles with an emphasis on their relationship to other modes of art expression.

Not open to students who have credit for Fine Arts 421 or 423.

421. Drawing and Fine Arts Orientation. Five credit hours. One Quarter. Autumn, Winter, Spring. Five two-hour laboratory periods and one hour of orientation. Staff.

Participation in laboratory experience in drawing with emphasis on the correlation of drawing and design in form, value, and color. Conocurrently, through lectures, discussions, and field trips, survey is made of Fine Arts specialization. The student is stimulated through individual guidance to find his areas of special interest.

Not open for credit to students who have credit for Fine Arts 401, 402, or 403.

430. Fundamentals of Art. Five credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour laboratory periods and two lectures each week. Not open to majors in Fine Arts.

A general course in the creative use of art materials, with lectures on fundamental art principles in relation to the home, advertising, commercial products and other phases of contemporary life.

431. Elementary Design. Five credit hours. One Quarter. Autumn, Winter, Spring. Five two-hour laboratory periods each week. Prerequisite, Fine Arts 421 or 401. Staff.

An introductory course in design to formulate and implement the principles governing the visual organization of form, shape, and color. The experiences in drawing are related to the problem of designing with tri-dimensional materials.

484. An Introduction to Ceramic Art. Three credit hours. One Quarter. Winter and Spring. No prerequisite. This course may be repeated to a total of nine hours. Mr. Bogatay, Mr. Friley, Mrs. Fetzer.

An introduction to pottery making. Short lectures on materials, forming and decorative processes, glazing and firing. Laboratory practice in building pottery by hand and in the use of the potter's wheel.

494. Introduction to Art. Three credit hours. One Quarter. Autumn, Winter, Spring. Three one-hour periods each week. Art History. Staff.

An introduction to the appreciation of the visual arts. Study of the elements of visual form in painting, sculpture, and architecture; and the analysis of style and expression in selected masterpieces of art.

532. History of Costume Design. Five credit hours. Winter Quarter. Five two-hour periods each week with outside problems.

A study of the development of costume from the standpoint of design with its social and historical background and its connection with the prevailing interior decorations of each period.

FLIGHT TRAINING
Ohio State University Airport

MR. KAMPE, MR. LANG, MR. JONES, MR. HOWARD

400A. Primary Flight Training. No credit. One Quarter. All Quarters. Total of twenty flying hours. Approximately three hours each week. Prerequisite, Flight Training 401 and 402, which may be scheduled concurrently. Student should contact University Airport before scheduling.

This course is for students with little or no previous flying experience. It is designed to train the student in the fundamental techniques in preparation for solo flight.

400B. Primary Flight Training. One credit hour. One Quarter. All Quarters. Total of twenty flying hours. Approximately three hours each week. Prerequisite, Flight Training 400A. Students should contact University Airport before scheduling.

A continuation of Flight Training 400A. Elementary maneuvers, strange field landings, cross-country procedures. Develops flying technique and aeronautical experience as required by the Civil Aeronautics Administration.

401. Aircraft Operations, Air Traffic Rules, and Meteorology. Two credit hours. One Quarter. All Quarters. Three recitations each week.

Practical elementary operation and care of small type aircraft, precautions in handling aircraft on the ground and in the air, air traffic rules, general aviation information for the student pilot and aeronautical meteorology.

402. Elementary Aeronautical Navigation. Two credit hours. One Quarter. All Quarters. Three recitations each week.

This course covers elementary pilotage, dead reckoning, aeronautical chart reading, drift problems, deviation and variation problems, contact orientation, and radio.

403. Introduction to Flying. One credit hour. One Quarter. All Quarters. Total of ten hours dual flying and twenty hours lecture. Approximately two hours of flying and two hours lecture each week. Student should contact University Airport prior to scheduling.

This course has been arranged to give the student a general knowledge of the basic fundamentals of flying and methods of cross-country navigation.

501. Aircraft Engines. Two credit hours. One Quarter. Autumn and Spring. Two recitations each week.

Operation and construction of aircraft engines, including cooling, lubrication, carburetion, and ignition systems, and operation of aircraft propellers.

502. Aircraft and Theory of Flight. Two credit hours. One Quarter. Winter and Summer. Two recitations each week.

Elementary theory of flight, aircraft design and aircraft structures.

503. Aeronautical Meterology. Two credit hours. Autumn and Spring Quarters. Two recitations each week. Perequisite, Flight Training 401 and Physics 420.

A study of meteorology as it affects flying.

504. Intermediate Aeronautical Navigation. Two credit hours. One Quarter. Winter and Summer. Two recitations each week. Prerequisite, Flight Training 402 or equal.

Areonautical charts, methods of navigation, pilotage, dead reckoning, and radio navigation as required by the Civil Aeronautics Administration.

510. Secondary Flight Training. One credit hour. All Quarters. Total of forty flying hours. Approximately five hours each week. Prerequisite, Private Pilot Certificate, and Flight Training 501 which may be scheduled concurrently. Students should contact University Airport before scheduling.

A continuation of the training received in Primary Flight Training for the purpose of developing a higher degree of coordination and judgment through additional training in more advanced maneuvers and cross-country flying.

515. Intermediate Flight Training. One credit hour. All Quarters. Total of forty flying hours. Approximately five hours each week. Prerequisite, Flight Training 510, 501, and Flight Training 502 and 504 which may be scheduled concurrently. Student should contact University Airport before scheduling.

A continuation of the training received in Flight Training 510. Includes night flying, instrument flying, and extensive cross-country flying.

520. Advanced Flight Training. One credit hour. All Quarters. Total of forty flying hours. Approximately five hours each week. Prerequisite, Flight Training 510, 515, 502 and 504; and Flight Training 501, 503, and Physics 420 which may be scheduled concurrently. Student should contact University Airport before scheduling.

A continuation of the training received in Flight Training 515. Emphasis is placed on perfecting the maneuvers and procedures previously introduced. Includes transition to advanced type aircraft, developing technical and aeronautical experience as required by the Civil Aeronautics Administration for a Commercial Pilot Certificate.

530. Instructor Training. One credit hour. All Quarters. Total of thirty-five flying hours. Approximately four hours each week. Prerequisite, Commercial Pilot Certificate or Private Pilot Certificate with aeronautical experience requirements for Commercial Pilot Certificate; concurrent Flight Training 532, and permission of the Director. Student should contact University Airport before scheduling.

Teaches the student how to be a Flight Instructor. It emphasizes clarity of expression in explaining maneuvers and correcting errors. The instructor acts as a student and simulates the usual errors made by the student.

532. Analysis of Flight Maneuvers. Two credit hours. All Quarters. Two recitations and one hour of conference each week. Prerequisite, concurrent Flight Training 530, and permission of the Director.

A presentation of flight maneuvers involved in aircraft pilot training with emphasis on: the theory of flight involved in each maneuver; analysis of student errors involved in learning each maneuver, and the actual teaching of each maneuver, which involves both adequate language and clarity of explanation. Included are classroom recitation and criticism of oral explanation and analysis of each maneuver. A portion of the time will be devoted to methods of grading student flights.

540. Instrument Training. One credit hour. All Quarters. Total of twenty flying hours and twenty hours in Link simulated instrument trainer. Approximately five hours each week. Prerequisite, Commercial Pilot Certificate or Private Pilot Certificate with aeronautical experience requirement for Commercial Pilot Certificate; concurrent or prior Flight Training 542, 503, and Physics 420, and permission of the Director.

Teaches flight by reference to instruments only and covers basic instrument flight, radio navigation and orientation, and instrument approaches. All procedures are first presented in the Link trainer.

542. Radio Orientation and Procedures. Two credit hours. All Quarters. Two recitations and one hour of conference each week. Prerequisite, concurrent Flight Training 540 and permission of the Director.

This course is designed to familiarize the trainee with the fundamentals of instrument flying and the difficulties likely to be encountered and rectification of same, such as pilot's reactions while flying solely by reference to instruments; the procedures and methods used in navigation; orientation and letdowns by use of radio. The analysis of each maneuver as flown by reference to the primary group of instruments and complete panel instruments. The use of the Dalton Aeronautical Computer is also taught.

550. Multi-engine Flight Training. One credit hour. All Quarters. Total of 12 flight hours. One hour each week. Prerequisite, Commercial Flight Certificate or Private Pilot Certificate with Aeronautical experience requirement for Commercial pilot Certificate and permission of the Director. Students should contact University Airport before scheduling.

Presents problems involved in flying multi-engined aircraft with emphasis on emergency procedures, prepares student for CAA flight test for multi-engine pilot rating.

NOTE: For course in Introduction to Aviation Psychology, see Psychology 627.

FORESTRY

(See Horticulture and Forestry)

FRENCH

(See Romance Languages and Literatures)

GENERAL STUDIES

Office, 107 University Hall

PROFESSOR OYLER AND ASSISTANTS

520. Factors in Successful Marriage. Three credit hours. One Quarter. Autumn, Winter, Spring. Mr. Oyler and others.

The objectives of the course; to create an intelligent understanding of the possibilities of successful married life; to aid the student in the development of emotional maturity stressing such factors as a sensible attitude toward sex, a sense of responsibility, etc.; to acquaint the student with those human characteristics that are most closely correlated with successful marriage; to make the student aware of the types of problems that are most frequently faced by married couples and to point out the methods whereby they may be dealt with successfully.

GENETICS

Instruction in genetics is given by various departments. The basic and theoretical courses, both elementary and advanced, are given in the Departments of Zoology and Entomology and Botany and Plant Pathology. Practical courses are given in the specialized departments; applied animal genetics in the Departments of Dairy Science and Poultry Science, and applied plant genetics in the Departments of Agronomy and Horticulture. A non-credit genetics seminar, sponsored by the Institute of Genetics, is held each Friday at four during the school year.

The following courses are available in genetics and their descriptions should be consulted under the offerings of the several departments:

Zoology 403.	General Principles of Heredity
Zoology 512	Heredity and Its Human Relations
Zoology 603.	Fundamental Genetics
Zoology 618.	The Cytological Basis of Genetics
Zoology 705.	Physiological Genetics
Zoology 706.	Population Genetics
Zoology 707.	Human Genetics
Agronomy 607.	Field Crop Breeding
Dairy Science 620	Livestock Genetics
Dairy Science 720	Advanced Dairy Cattle Breeding
Botany 635.	Plant Genetics
Botany 740.	Plant Cytogenetics
Horticulture 601.	Horticultural Plant Breeding
Poultry Science 606.	Poultry Genetics

Special problems (701) are offered in many of these departments. For graduate courses consult the Graduate Bulletin.

GEOGRAPHY

Office, 136 Hagerty Hall

PROFESSORS SMITH, CARLSON, AND WRIGHT, ASSOCIATE PROFESSOR RANDALL, ASSISTANT PROFESSORS HOFFMAN, BASILE, VILLMOW, AND HUNKER, MR. SIMMONS, LECTURERS

401. Introduction to Geography. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Mr. Carlson, Mr. Basile, Mr. Villmow, and assistants.

The elements of the natural environment, their characteristics, their distribution, and their relation to population density and human activities. Geography in relation to the physical and social sciences.

403. Economic Geography. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Geography 401. Mr. Smith, Mr. Wright, Mr. Randall, Mr. Hoffman, Mr. Hunker, Mr. Simoons.

The geography of the world's commodities and their regional aspects; a survey of the economic activities of the principal political divisions of the world in the light of their geographic conditions. An analysis of economic geographic factors in current international affairs.

503. Fundamentals of Economic Geography. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, third year standing. Mr. Hoffman, Mr. Hunker.

A survey of the elements of the human habitat with particular emphasis on the major world resources. A consideration of the geographical and economic factors which have been and are important in the development of the major industries and the chief industrial areas of the world.

Not open to students who have credit for Geography 403.

505. Geography of the United States and Canada. Three credit hours.

One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Geography 403. Also open to Seniors in the Conservation curriculum in the College of Agriculture. Mr. Wright, Mr. Basile.

A geographic analysis of the United States and Canada; the correlation of their natural resources and other environmental factors with their economic and social structure and development.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

604. Conservation of Natural Resources. Three credit hours. Autumn Quarter. Three class meetings each week. Prerequisite, Geography 401 and 403, or fifteen hours of allied subjects. Mr. Wright.

Economics and geographic appraisal of resource conservation in the United States. Regional and national planning for resource utilization.

605. Geography of Ohio. Three credit hours. Winter Quarter. Three class meetings each week. Prerequisite, Geography 401 and 403, or fifteen hours of allied subjects. Mr. Wright.

An appraisal of geographic factors in the development of Ohio's agriculture, manufacturing, and commerce. Historical development of economics.

611. Cartography and Map Interpretation. Three credit hours. Winter Quarter. Three class meetings each week. Prerequisite, Geography 401 and 403, or ten hours of allied subjects. Mr. Smith.

The interpretation and appreciation of maps. A graphical and geometrical consideration of the major systems of map projections and their use for cartographic purposes. A survey of the various map series published by the several agencies of the United States government, by foreign countries, and by other map-producing organizations.

615. Climatology. Four credit hours. Autumn Quarter. Four class meetings each week. Prerequisite, fifteen hours in natural or social sciences, including one of the following courses: Geography 401, Physics 420, Botany 402, or Agronomy 501. Mr. Smith.

Elements of climate and their distribution. The controls of climate. Types of climate and their distribution with particular reference to agricultural production, natural vegetation, and the major soil groups. Climates and their effects on the economic and other activities of man.

GEOLOGY

Office, 103 Orton Hall

PROFESSORS LAMEY, SPIEKER (RESEARCH PROFESSOR), GOLDTHWAIT, FULLER, MELVIN, SCHOPF, AND LaROCQUE, ASSOCIATE PROFESSORS BATES AND PINCUS, ASSISTANT PROFESSORS SUMMERSON, MOORE, WHITE, WEISS, AND MARPLE (CURATOR), LECTURERS, AND ASSISTANTS

401. Elementary Physical Geology. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and one two-hour laboratory period each week. One half-day field trip is required in the Winter Quarter. Mr. White and staff.

A study of the materials of the earth's crust; of the structural features of the earth's crust and how they were formed; and of the surface features of the earth and their origin. In the laboratory the common minerals and rocks and topographic maps are studied.

Not open to students who have credit for Geology 435 or 451, or General Studies 451.

402. Elementary Historical Geology. Five credit hours. One Quarter. Autumn, Winter, Spring. Four class meetings and one two-hour laboratory period each week. One half-day field trip is required except in the Winter Quarter, unless credit was received in Geology 401 when the field trip was taken. Prerequisite, Geology 401 or 435 or 451. Mr. LaRocque and staff.

An elementary study of the geologic history of the earth and its inhabitants. In the laboratory, the common types of fossils and geological maps are studied.

451. Introduction to Geology. Five credit hours. One Quarter. Autumn and Winter. Four class meetings and one two-hour laboratory period each week. One half-day field trip is required. Mr. Pincus, Mrs. Marple.

A study of the development of the earth's surface and its inhabitants of the past, with special emphasis on the collection and evaluation of geological evidence and on the nature of geological reasoning; interpretation of landscape and utilization of earth materials.

Not open to students who have credit for Geology 401 or 435 or General Studies 451.

533. Geology of Water Resources. Three credit hours. Winter Quarter. One Saturday meeting field trip is required. Prerequisite, Geology 401 or 435 or 451. Mr. Weiss.

A study of the geology and hydrology of surface and subsurface waters, with application to conservation programs.

Not open to students who have credit for Geology 433.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Geomorphology. Five credit hours. Autumn Quarter. Four class meetings and one two-hour laboratory period each week. Saturdays must be kept open for field trips. Prerequisite, Geology 504. Mr. Goldthwait.

A detailed study of the processes which shape the land surface, and the forms produced. These are inspected on topographic maps and in the aera near Columbus.

605. Economic Geology: Metals. Five credit hours. Autumn Quarter. Five class meetings each week. Prerequisite, four Quarters of geology or of geology and mineralogy, and Mineralogy 402, Geology 526 is also desirable. Mr. Lamey.

A study of the characteristics and origin of metallic mineral deposits.

606. Economic Geology: Non-Metals and Coals. Five credit hours. Winter Quarter. Five class meetings each week. Prerequisite, four Quarters of geology or of geology and mineralogy, and Mineralogy 402; Geology 526 is also desirable. Mr. Bates.

A study of non-metallic materials except petroleum. Origin, properties, classification, and distribution of the industrial minerals and rocks, and coal, with special emphasis on the coals of Ohio.

607. Economic Geology: Petroleum. Five credit hours. Spring Quarter. Three class meetings and two two-hour laboratory periods each week. Prerequisite, four Quarters of geology or of geology and mineralogy. Mr. Bates.

A study of the principles of petroleum geology.

***610. Geomorphology of Eastern United States.** Four credit hours. Autumn Quarter. Five class meetings each week. Given in alternate years. Prerequisite, four Quarters of geology or of geology and geography, including Geology 601. Mr. White.

A study of the physiographic regions of the United States east of the Great Plains. The topographic form and physiographic history with a resumé of geologic history as background.

613. Glacial Geology. Five credit hours. Spring Quarter. Saturdays must be kept open for field trips. Prerequisite, elementary course in geology and preferably 601. Mr. Goldthwait.

Living glaciers and the features produced by glaciers, present or past, with special reference to features produced in Ohio.

* Not given in 1957-1958.

GERMAN

Office, 213 Derby Hall

PROFESSORS SEIDLIN AND FLEISCHHAUER, ASSISTANT PROFESSOR WONDERLEY, INSTRUCTORS AND ASSISTANTS

401. Elementary German. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. All instructors.

The elements of German grammar; reading of easy prose; oral and written practice.

402. Elementary German. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite, German 401 or equivalent. All instructors.

The elements of German grammar; reading of easy prose; oral and written practice.

HISTORY

Office, 211 University Hall

PROFESSORS DULLES, HILL, McDONALD, ROSEBOOM, WEISENBURGER, SIMMS, RAGATZ, AND FISHER, ASSOCIATE PROFESSORS MORLEY, VARG, WALTERS, BREMNER, AND COLES, ASSISTANT PROFESSORS GOLDBERG, PEGUES, ROBERTS, AND POIRIER, INSTRUCTORS AND ASSISTANTS

403-404. History of the United States (1763 to the Present). Five credit hours each Quarter. Autumn, Winter, Spring. Lectures, discussion, and required reading. All instructors.

403. A study of the general political, constitutional, and economic development of the United States from the beginning of the Revolutionary era to the end of the Civil War.

404. A continuation of History 403. The two provide a logical sequence but either may be taken independently as an elective.

510. Great Figures in British History. Three credit hours. Winter Quarter. Mr. Roberts.

British history since 1485 as illustrated in the lives of notable figures. Lectures, reading, discussion.

511. Great Figures in Greek and Roman Antiquity. Three credit hours. Spring Quarter. Mr. McDonald.

A biographical approach to the study of Antiquity through an examination of the lives and times of eight prominent men (Solon, Pericles, Demosthenes, Alexander the Great, Hannibal, Cicero, Augustus, and Constantine). Readings in ancient and modern biographies.

512. Great Figures of Modern Europe. Three credit hours. Autumn Quarter. Staff.

A study of modern European history through an examination of the lives and times of great figures. Lectures, readings, and discussions.

513. Great Figures in American History. Three credit hours. One Quarter. Autumn, Winter, Spring. Mr. Coles.

A study of the main trends of American development through the medium of biography. Lectures and discussions are devoted to historical background, comparison and contrast of leading figures, and analysis of motivation and character.

***517. The Middle Ages.** Five credit hours. Spring Quarter. Mr. Pegues.

Roman civilization and its decline; early Christianity and the Barbarian invasions; Islam and Arabic Culture; rise of Papacy; Charlemagne and the Carolingian Empire; Otto I and the Holy Roman Empire; feudal society; the medieval Church; the Crusades; the rise of towns; the Renaissance; the rise of national states. Lectures, discussions, and required reading.

537. Recent History of the United States (1898-1928). Three credit hours. One Quarter. Autumn and Winter. Mr. Dulles, Mr. Bremner, Mr. Varg.

The impact of modern industrialism upon American imperialism, society, government, and foreign policy. Laissex-faire and government regulation, the Progressive movement, and the first World War.

* Not given in 1957-1958.

538. Recent History of the United States (since 1928). Three credit hours. One Quarter. Winter and Spring. Mr. Dulles, Mr. Bremner, Mr. Varg.

A continuation of History 537, but may be taken separately. Prosperity and depressions, the New Deal, the United States in international affairs, the Second World War.

590. Contemporary Europe (1920 to the Present). Three credit hours. Autumn Quarter. Mr. Dorn.

Beginning with the settlement of the Paris Peace Conference, this course aims at a study of the principal currents of European history since 1920, the failure of the international security organization, the dissolution of the European system under the impact of totalitarian movements, World War II, and Soviet imperialism since 1945.

HOME ECONOMICS

Office, 220 Campbell Hall

PROFESSORS SCOTT, DIRKS, GILMORE, HEYE, LEHMAN, McGINNIS, NEWARK, PATTON, PRUDENT, ASSOCIATE PROFESSORS BANCROFT, BEARD, GREEN, HARGER, HILLMAN, KENNEDY, LEWIS, LLOYD, TURNBULL, WEAVER, AND WOOD, ASSISTANT PROFESSORS ALBANESE, ALEXANDER, BECKWITH, BLOOM, EVERHART, FISCHER, IRVINE, KYLE, McENERY, MESSIER, MOORE, RYAN, SMITH, TAPSCOTT, WARFIELD, WERTENBERGER, AND MRS. MARTEN, MISS MILLICAN, MISS PARNELL, MRS. ROGERS, MRS. TREECE, MRS. WINNER, AND ASSISTANTS

405. Elements of Family Living. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Miss Heye, Miss Hoeflin, Mrs. Moore, Miss McGinnis, Miss Parnell.

This course is designed to challenge the student with the problems inherent in present-day home life, and to arouse interest in further study and experiences concerned with meeting such problems. Basic needs of the family are introduced. The contribution of home economics to family well-being is emphasized.

440. Introduction to Nutrition and Foods. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Home Economics 405 is recommended as a concurrent or preceding course. Mrs. Lewis, Mrs. Rogers, Miss Green, Mrs. Messier, Mrs. Prudent, Mrs. Wertenberger.

This course is designed to assist the student in developing food selection habits which meet nutritional standards. The social significance of food and standards for food selection will be emphasized from the standpoint of meeting needs at various economic levels.

Not open to students who have credit for Home Economics 410.

450. The House. Three credit hours. Autumn, Winter, Spring. Three one-hour class meetings for discussion each week. Miss Lloyd, Mrs. Moore, Miss Newark.

A study of present-day housing from the standpoint of health, safety, economy, convenience, aesthetic qualities, and other values of concern to the family.

505. Textiles. Three credit hours. One Quarter. Autumn, Winter, Spring. Two one-hour class meetings and one two-hour laboratory period each week. Prerequisite, Home conomics 430. Miss Turnbull.

A study of the characteristics of textile products and the extent to which fiber and processing determine these characteristics. Some study of labeling of textiles and textile testing by simple tests.

Not open to students who have credit for Home Economics 401.

506. Household Equipment. Five credit hours. One Quarter. Autumn and Spring. Four one-hour class meetings and one two-hour laboratory periods each week. Miss Beard, Miss Bloom.

A study of the principles involved in the selection, construction, operation, and care of household equipment and its relation to the well-being of the family.

551. Nutrition: Family. Three credit hours. One Quarter. Winter and Spring. Two one-hour class meetings and one two-hour laboratory period each week. Prerequisite, Home Economics 441 or the equivalent. Mrs. Messier.

A study of some fundamental principles of human nutrition and their application to the feeding of adults and children in typical families.

560. Home Management. Three credit hours. One Quarter. Autumn,

Winter, Spring. Three class meetings each week. Prerequisite, Economics 402 or 406 and twenty Quarter-credit hours in home economics courses. Miss Lloyd, Miss Newark.

A study fo the management of the various resources available to the family with a view to promoting family well-being and satisfaction.

Not open to students who have credit for Home Economics 518.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

610. Nutrition. Three credit hours. Winter Quarter. Three one-hour class meetings each week. Prerequisite, Home Economics 440, Physiology 422 or 507, and Agricultural Biochemistry 506 or 601. Miss Green.

A consideration of recent human nutrition studies as they relate to modern concepts of nutrition.

681. Home Economics Extension Methods. Five credit hours. Spring Quarter. Four one-hour class meetings and one two-hour laboratory period each week, with opportunity for field observation. Prerequisite, Agricultural ducation 526 and consent of the instructor. Miss Warfield and Home Economics Extension staff.

This course is planned to give a knowledge of: Home economics extension methods, relationship of home economics extension to other educational movements, resources of state, county, and community.

No student may register for the course until she is fully admitted to the Teaching Curriculum by her Faculty Adviser.

761. Family Development. Three credit hours. Winter Quarter. Two one and one-half hour class meetings each week. Prerequisite, twenty Quarter hours in psychology, sociology or child development, and family life. Miss Hoeflin, Miss McGinnis.

An analysis of ways in which goals and aspirations of the individual and family are developed during each stage of the family cycle, through personality, time, money, energy and skills of each member. Individual projects of a personal or professional nature.

For the description of curricula and other courses in Home Economics, see the Bulletin of the School of Home Economics.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture and Forestry Building

PROFESSORS HOWLETT, LAURIE (EMERITUS), H. D. BROWN, W. N. BROWN, AND CHADWICK, ASSOCIATE PROFESSORS ALBAN, GOULD, HARTMAN, AND KIPLINGER, ASSISTANT PROFESSORS COMIN, HILL, HACSKAYLO, REISCH, AND ASSISTANTS

(For curriculum in Horticulture see page 68.)

GENERAL HORTICULTURE

402. General Horticulture. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation periods each week. Mr. Alban, Mr. Comin, Mr. Hartman, Mr. Hill.

The principles and practices underlying production and use of tree fruits, small fruits, vegetables, flowers, and ornamental plants. Varieties, soils, sites, fertilizers, culture, pest control, harvesting, storage and processing are considered.

Not open to students who have credit for Horticulture 405.

403. Fundamentals of Horticulture. Five credit hours. One Quarter. Winter, and Spring. Five recitations each week. Mr. Hartman.

A study of plant materials commonly used in the horticultural industry emphasizing the development of gross plant structures in relation to cultural practices and the environment in orchard, garden, greenhouse and nursery.

Not open to students who have credit for Horticulture 401.

440. Elementary Plant Propagation. Five credit hours. Spring Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Horticulture 403 and Botany 402; Botany 402 may be taken concurrently with permission of instructor.

The principles and practices involved in the commercial propagation of florists' crops, garden flowers, trees, shrubs, evergreens, small and tree fruits, and vegetables. Propagation by spores, seeds, cuttings, layers, runners, division, budding and grafting is covered.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

Prerequisites for these courses must include acceptable courses in pomology, vegetable gardening, horticultural products, floriculture and ornamental horticulture, and forestry.

601. Horticultural Plant Breeding. Five credit hours. Winter Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Zoology 403, Horticulture 503 or 522, or 542. Mr. W. N. Brown.

A study of the application of the principles of heredity to the modification of plants. Methods and techniques as applied to the breeding of representative horticultural plants. Also the history, scope, and role of breeding. Prospective developments, seed production, seed testing and certification, variety maintenance, and elements of field plot techniques and mathematical analysis used in breeding experiments are some of the other topics treated briefly.

609. The Management of Storages for Horticultural Crops. Three credit hours. Autumn Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite or concurrent, Horticulture 503 and 513, or 522 and 513, or 542 or 550. Mr. Comin.

The course will include a study of ways and means of providing proper precooling, holding, and storage conditions for fruits, vegetables, flowers, and nursery stock. It will include a discussion of temperature, humidity, and air control methods used in various structures, as well as an insight into management and operation problems dealing with maintenance of these structures and refrigeration equipment.

610. Weed Control in Horticultural Crops. Three credit hours. Spring Quarter. Three recitations each week. Prerequisite, fifteen hours in Horticulture or five hours in Horticulture and ten hours in Botany. Mr. Alban.

A study of the ecological, soil, environmental, and cultural factors which influence weed development in horticultural crops. Particular emphasis will be placed on cultural, mechanical, and chemical methods of weed control with a review of most recent developments.

701. Minor Investigations. Two to five credit hours. Autumn, Winter, and Spring Quarters. Offered at Columbus and at Wooster. All instructors.

This course is for students who desire to work out special problems in the fields of pomology, vegetable gardening, floriculture and ornamental horticulture, horticultural products or forestry. students will elect work in their desired subjects after a conference with the instructor in charge.

704. Horticultural Seminar. One credit hour. Autumn, Winter and Spring Quarters. Graduate students majoring in Horticulture must register for credit for at least two quarters. All instructors.

705. Seminar in the Historical Literature of Horticulture. Three credit hours. Autumn Quarter. Alternate years. Prerequisite, Horticulture 503, 522, or 542. Open to students in other departments upon permission of the instructor. Mr. Howlett.

A study of the history and literature of horticulture from earliest times to the present. Among the subjects covered are early gardening literature, Seventeenth and Eighteenth Century literature concerned with horticulture, as well as the history of horticulture in America. Trends and events of horticulture during the last half century are included.

711. Experimental Horticulture. Four credit hours. Autumn Quarter. Two discussion periods and four hours laboratory each week of which two

hours are scheduled. Prerequisite, Botany 605, or the equivalent. This course is designed for those specializing in horticulture, although it is open to students in other departments. Mr. Howlett.

The course includes effect of environmental factors upon growth, flowering and fruiting of horticultural plants. Nitrogen, phosphorus, potassium, magnesium and carbohydrate deficiencies are considered, with tissue testing as one determining method.

712. Experimental Horticulture. Three credit hours. Winter Quarter. Two lectures and four hours laboratory each week of which two hours are scheduled. Botany 605 must be included in the general prerequisites or taken concurrently. Mr. Hill.

The course is primarily concerned with the effects of excesses and deficiencies of micronutrient elements upon the growth, flowering, and fruiting of horticultural plants. Also considered are means of detecting and correcting excesses and deficiencies of these plant nutrients and the relationship of the micronutrients to other essential elements.

713. Advanced Plant Propagation. Five credit hours. Winter Quarter. Four recitations and one two-hour laboratory each week. Prerequisite, Horticulture 440 and 550, or equivalent, and Botany 605. Mr. Chadwick.

An anatomical and physiological study of the basic principles of plant propagation. Major consideration will be given to propagation by means of cuttings, grafting, budding and seeds. Anatomical structures and the physiological responses involved in propagation by cuttings, grafts, buds, and seeds are interpreted in light of commercial practices.

716. Structure and Development of Horticultural Plants. Five credit hours. Winter Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, twenty Quarter hours credit Agronomy, Botany, or Horticulture. Mr. Hartman.

A critical study of the effect of cultural and environmental factors upon the anatomy of flowers, fruits, and vegetative parts of horticultural crop plants, with special emphasis upon the consequent relationship of these factors to the quality of the horticultural product.

Not open to students who have credit for Horticulture 714 and 715.

POMOLOGY

503. Principles and Practices of Pomology. Five credit hours. Autumn Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Horticulture 403. Mr. Hartman.

A study of the principles and practices involved in the culture of apples and pears. Status of the industry, varieties, establishment of the orchard, fruiting habits, soil management and fertilizers, pollination, fruit setting, propagation, pruning, spraying, and harvesting are among the subjects considered.

504. Principles and Practices of Pomology. Five credit hours. Winter Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Horticulture 403. Mr. Hill.

The course serves to acquaint the student with the fundamentals of small- and stone-fruit production. Emphasis is given not only to the presently approved and accepted cultural practices, but also to the fundamental principles upon which these practices are based.

509. Systematic Pomology. Three credit hours. Autumn Quarter. One recitation and two two-hour laboratory periods each week. Prerequisite, Horticulture 403. Mr. Hartman.

Special training is given in the identification of the most important varieties of apples, peaches, pears, plums, cherries, nuts, and small fruits. A few sub-tropical fruits are studied also. Emphasis is placed also on the season of ripening of these fruits, their storage quality, regional adaptation, growth characters of the foliage and trees, and their botanical relationships.

511. Spraying and Dusting Practices with Fruit and Vegetable Crops. Three credit hours. Spring Quarter. One recitation and two two-hour laboratory periods each week. Prerequisite, Horticulture 522, 503 or 504, and Botany 419 and Entomology 550. Mr. Hartman.

Designed to acquaint the student with the various spray and dust formulations, their uses, and time and method of application for fruit and vegetable crops. Emphasis is placed on the methods of preparation of spray and dust materials in relation to effective application, and minimum crop damage. Fruit-thinning sprays, fruit-setting chemicals, pre-harvest sprays, and certain aspects of insecticide and fungicide application are included in lecture and field-laboratory demonstrations.

513. The Handling, Packing, and Storage of Fruits and Vegetables. Five credit hours. Autumn Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite or concurrent, Horticulture 503 or 504, or 522. Mr. Comin.

Operations and equipment used in harvesting, handling and storage of fruits and vegetables. Emphasis is placed on time of harvest, types of packaging, and packing operation. State and Federal grades are also considered. Emphasis is placed on physiological principles underlying the common practices employed in the handling and storage of fruits and vegetables.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

606. Tropical and Subtropical Fruits and Plants. Three credit hours. Winter Quarter. Two recitations and one two-hour laboratory period each week. Given in alternate years. Prerequisite, Botany 605 or equivalent. Mr. Hartman.

A study of the botanical classification, geographical distribution, regional adaptation, cultural methods, market outlets and transportation problems of tropical and subtropical fruits and plants. Emphasis is on fruits grown commercially in sub-tropical North America, such as avocado, banana, citrus fruit, date, fig, mango, olive, papaya, and nut-bearing trees.

Not open to students who have credit for Horticulture 506.

VEGETABLE CROPS

522. Principles of Vegetable Production. Five credit hours. Winter Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Horticulture 403. Mr. Alban.

A study of the practices and principles involved in the production and utilization of vegetable crops, including the location of garden enterprises; garden planning, seed sources, and planting; transplanting; construction and uses of hot-beds and cold-frames; garden soils, their fertility, preparation, and management; irrigation; garden tools and equipment; and pest control.

526. Vegetable Forcing. Five credit hours. Winter Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Horticulture 403. Mr. Alban.

Includes a study of the origin and development of greenhouse vegetable production and present-day cultural practices with reference to the more important greenhouse vegetable crops.

Soil management, varieties, planting, fertilization, pest control, and general greenhouse management are included in laboratory and lectures.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open ot Freshmen or Sophomores.

621. Systematic Olericulture. Three credit hours. Autumn Quarter. Two recitations and one two-hour laboratory period each week. Prerequisite, Botany 402. Mr. Alban.

Special training is given in the identification of the most important vegetable varieties. Emphasis is placed on the recognition of quality in the fresh vegetable through a knowledge of varieties and factors associated with quality. The origin and botany of the principal vegetable varieties with adequate descriptive notes are also included.

622. Commercial Vegetable Crops. Five credit hours. Spring Quarter. Four recitations and one two-hour laboratory period each week. Prerequisite, Horticulture 522. Mr. W. N. Brown.

Devoted to the study of the history, plant characteristics, physiology, and culture of the principal vegetable crops including propagation, varieties, soil adaptation and preparation, planting, fertilizing, cultivation, pest control, and cost of production.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

For courses in Landscape Design see offerings listed under Department of Architecture and Landscape Architecture.

†407. Herbaceous Plants, Floral Design and Lawns. Three credit hours. Summer Quarter. Two recitations and one two-hour laboratory period each week.

† Not given during the academic year, 1957-1958.

The principles and practices underlying the selection, planting, maintenance, and use of herbaceous perennials, annuals, and bulbs, in the home garden. Propagation, pest control, soils, fertilization as related to these plants are discussed. Lawns, house plants, and floral design are also covered. To alternate with Horticulture 408.

Not open to students who have credit for Horticulture 406.

†408. **Home Gardening. Woody Deciduous Plants. Roses and Evergreens.** Three credit hours. Summer Quarter. Two recitations and one two-hour laboratory period each week.

The principles and practices underlying the selection, planting, maintenance, and use of trees, shrubs, evergreens, and garden roses on the home grounds. Landscape design, propagation, pruning, pest control, and other maintenance practices relating to these plants are discussed. To alternate with Horticulture 407. To be given in Summer Quarter 1957.

Not open to students who have credit for Horticulture 406.

542. **Principles and Practices of Floriculture.** Five credit hours. Autumn Quarter. Four recitations and one three-hour greenhouse period each week. Prerequisite, Horticulture 440, and Botany 402. Mr. Kiplinger.

Principles and practices involved in operating greenhouses, including construction, heating, light, photoperiodism, temperature, humidity, ventilation, moisture, soils, fertilizers, deficiencies and excesses, diseases and insects.

543. **Principles and Practices of Floriculture.** Five credit hours. Winter Quarter. Four recitations and one three-hour greenhouse period each week. Prerequisite, Horticulture 542. Mr. Kiplinger.

A continuation of Horticulture 542 dealing with roses, carnations, chrysanthemums, orchids, snapdragons, stocks, asters, bulbs, and other commercial crops grown as cut flowers. Commercial greenhouse establishments will be visited.

544. **Garden Management.** Five credit hours. Spring Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Horticulture 403 or permission of the instructor.

A course designed to study the identification, culture, and landscape use of bulbs, annuals, herbaceous perennials and garden roses. Some consideration will be given to rock and water gardens, lawn grasses, turf management, and pest control.

545. **Principles and Practices of Floriculture.** Five credit hours. Spring Quarter. Four recitations and one three-hour greenhouse period each week. Prerequisite, Horticulture 542. Mr. Kiplinger.

Study of African violets, azaleas, begonias, calceolarias, chrysanthemums, cinerarias, cyclamen, gardenias, geraniums, fuchsias, gloxinias, hydrangeas, poinsettias, roses, bulbous and other potted flowering and foliage plants.

546. **Floral Design and Flower Shop Management.** Three credit hours. Spring Quarter. One lecture and recitation and one three-hour laboratory period each week. Prerequisite, Horticulture 542 and Economics 406.

A study of the principles and practices of creating commercial floral designs. Consideration will be given to the establishment and management of a retail flower shop.

550. **Ornamental Plants.** Five credit hours. Autumn Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Horticulture 403 and Botany 402 or permission of the instructor. Mr. Chadwick, Mr. Reisch.

A course devoted to a detailed study of deciduous trees, shrubs, and vines, their identification, growth habits, culture, adaptation to environmental conditions, uses, combinations, and management in landscape plantings.

551. **Ornamental Plants.** Five credit hours. Winter Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Horticulture 403 and Botany 402 or permission of the instructor. Mr. Reisch.

A course devoted to a detailed study of narrowleaf and broadleaf evergreens: their identification, growth habits, culture, adaptation to environmental conditions, uses, combinations, and management in landscape plantings.

† Not given during the academic year 1957-1958.

552. Ornamental Plants. Five credit hours. Spring Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, Horticulture 550 and 551. Mr. Reisch.

A continuation of Horticulture 550 and 551. Major consideration will be given to a detailed study of clons, varieties, and species of several outstanding genera of woody ornamental plants, and the use of deciduous and evergreen plants in simple designs. One or two full day trips will be required.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

650. Principles and Practices of Nursery Management. Five credit hours. Spring Quarter. Four recitations and one three-hour laboratory period each week. Prerequisite, Horticulture 440, 550 and 551. Mr. Chadwick.

Fundamental practices involved in the layout and management of a modern nursery. Emphasis is placed on selection of nursery sites, soil management, fertilization, transplanting, and pruning practices, pest control, digging, storage construction and management. Trips to commercial nurseries will be required.

651. Marketing of Greenhouse and Nursery Products. Three credit hours. Spring Quarter. Three recitations each week. Prerequisite, Economics 406 and Horticulture 543 or 551. Mr. Chadwick, Mr. Kiplinger.

Study of techniques in grading, packaging, shipping, and selling of florist and nursery crops. Preparation of nursery advertising. Design and management of garden stores and related enterprises.

683. Arboriculture. Five credit hours. Autumn Quarter. Four recitations and one three-hour laboratory period each week. Prerequisite, Horticulture 550, and Botany 606. Mr. Chadwick, Mr. Reisch.

A course devoted to the planting and maintenance of ornamental trees and shrubs and designed for students interested in city forestry, park maintenance or commercial arboriculture. Major consideration is given to environmental factors affecting plant growth, planting, fertilization, pruning, cabling, tree surgery, equipment, diagnosis of plant troubles, and pest control.

HORTICULTURAL PRODUCTS

423. Principles of Food Preservation. Three credit hours. Spring Quarter. One lecture and two two-hour laboratory periods each week. Mr. H. D. Brown, Mr. Gould.

History of the commercial fruit and vegetable processing industry. Principles in freezing, canning, dehydration and fermentation. Types of spoilage. The laboratory work will consist of the operation of retorts, heat exchangers, sealing machines, dehydrators and other food processing equipment; grading and quality evaluation.

524. Canning, Freezing, and Dehydration. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Horticulture 423. Mr. H. D. Brown, Mr. Gould.

Methods and equipment employed in canning, freezing, and dehydration of fruits and vegetables and related products including purees and juices. Objective quality evaluation and grading procedures.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

624. Specialty Products, Including Pickling and Fermentation. Five credit hours. Autumn Quarter. Four lecture and one two-hour laboratory period each week. Mr. H. D. Brown.

Preparation of jams and jellies, syrups, baked beans, soups, and condiments. Discussions of the role of spices, sugars, water, and other ingredients used in the preparation of specialty products. Principles and methods of preparing fermented goods; practices of salting and brining. The use of bacteria and yeast in the production of foods.

629. Food Products Examination. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Horticulture 423 or Home Economics 441. Mr. Gould.

The lectures cover the food laws, food standards and subjective and objective methods of determining the quality of processed fruits and vegetables and related food products. The laboratory work is designed to acquaint the student with quick objective quality control methods, and the determination of food constituents and foreign materials.

†631. Commercial Management and Practices with Horticultural Products. Five credit hours. Summer Quarter. One lecture and two four-hour laboratory periods each week. Prerequisite, Horticulture 524. Mr. Gould.

An evaluation of the relationships of definite grades of raw products to the quality and yield of the processed products. Particular emphasis will be given to quality factors in canning, freezing, and dehydration. Field trips will be taken to acquaint students with the operation of processing plants.

710. Theories and Techniques Employed in the Horticultural Processing Industry. Two credit hours. Autumn, Winter, Spring and Summer Quarters. Mr. H. D. Brown, Mr. Gould.

Topics to be considered:

†A. Plant Sanitation and Plant Equipment Design. Summer Quarter. Mr. Gould.

B. Canning, Freezing, and Dehydration Methods. Autumn Quarter. Mr. Brown.

C. Advanced Theories Involved in the Manufacture of Fermented and Specialty Products. Winter Quarter. Mr. Brown.

D. Color Evaluation and Quality Control. Spring Quarter. Mr. Gould.

May be repeated by undergraduates up to a total of 6 hours credit.

FORESTRY

402. Farm Forestry. Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. For agricultural students. Mr. Hacskaylo.

Farm forestry as related to farm management, good land use, and the conservation of soil, water, wildlife. The protection, management, and perpetuation of farm forests. The measurement, harvesting, utilization and marketing of farm forest products. Tree planting for wood production, erosion control, windbreak, and Christmas trees.

408. Dendrology. Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Mr. Hacskaylo.

A study of the important tree species of North America with particular emphasis on methods of identification, ranges, and habitats.

410. Principles of Forestry. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Mr. Hacskaylo.

History of American forests, their character and occurrence; underlying fundamentals of silviculture and forest measurement; introduction to forest management and protection.

For description of graduate courses in this department see the Bulletin of the Graduate School.

INDUSTRIAL ENGINEERING

Office, 125 Industrial Engineering Building

PROFESSOR LEHOCZKY, ASSOCIATE PROFESSOR MOORE, AND STAFF

419. Elementary Machine Work. Three credit hours. One Quarter. Autumn, Winter, Spring. Six hours of lecture and laboratory each week. Prerequisite, Agricultural ngineering, third year. Mr. Moore and others.

A study of the machine tool fundamentals from the engineering point of view. Laboratory practice in this course is confined to fundamental operations on the engine lathe and other basic machine tools.

This course requires the use of a pair of safety glasses. In the event that the student must have prescription lenses, he shall obtain his safety glasses during the Quarter preceding their first use. This may be done through the Optometry Clinic, Room 15, Optometry Building, or through any registered optometrist.

Not open to students who have credit for Industrial Engineering 420.

† Not given during the academic year, 1957-1958.

INTERNATIONAL STUDIES
Office, 100 University Hall

SUPERVISORY COMMITTEE: PROFESSORS HELMS AND SMITH, ASSOCIATE PROFESSORS NEMZER, CALDERWOOD, FISHER, AND BENNETT

INTERNATIONAL STUDIES CURRICULUM

The curriculum in International Studies is an interdepartmental program adjusted to the needs of each student, which will aid him to secure a liberal arts education with some basic training in international relations. With respect to the latter, the student selects one geographical area to be a focus for his study and future cultural or professional interest and takes several courses dealing with that area. He is not expected to become an expert on that area by the end of his senior year and takes a variety of other courses in the social sciences. The aim is intelligent citizenship in the modern world, a citizenship based upon a broad and cultural background, well motivated and closely integrated. For those students who are so minded, the International Studies curriculum may also become a foundation for professional work or foreign service in commerce, diplomacy, education or related fields.

The curriculum is a four-year program, leading to the Bachelor of Arts degree. In his first six Quarters, the student is expected to secure a broad cultural base for his studies, meeting his college requirements and obtaining also a fundamental knowledge of a foreign language connected with the geographical area of his interest. During this period, the student may elect International Studies 410 (Basic Issues in World Affairs), as an introduction to the program. In the second half of the curriculum, the student will meet the requirements for his major by selecting several courses related to his area of special interest (such as Latin America, the British Commonwealth, Eastern Europe, and the Orient) in history, political science, geography, literature, economics and other departments. Beyond these courses in his area of general interest, he will with his adviser combine these and other courses into a pattern which meets his needs. Among these, he is required to take a number of general courses, including Political Science 613 (Contemporary International Politics), Economics 615 and Geography 621 (Europe) or 624 (Latin America) or 625 (Far East). Finally, two International Studies courses are required: 601, a conference course usually taken in the junior year, and 721 or 731 or 741, a pro-Seminar usually taken near the end of the senior year.

Students interested in the International Studies Curriculum should consult at the earliest opportunity with some member of the Faculty Supervisory Committee, listed above.

410. Basic Issues in World Affairs. Two credit hours. One Quarter. Autumn and Winter. Two one-hour class meetings each week. No prerequisite. Classes will be led by members of the social science and humanities departments. Mr. Nemzer, Supervisor.

Lectures, discussions, and collateral reading.

This course is designed as an introduction to International Affairs and is open to any student. The course is intended to serve two groups: students interested in the International Studies curriculum, and any student interested in International Affairs.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Minor Problems in International Studies. Three credit hours. Winter Quarter. Two class meetings each week. Open to students majoring in International Studies or having equivalent preparation. Prerequisite, Political Science 613 or its equivalent. A reading and research program in addition to panel discussions and informal conferences is worked out to meet the special interests of those enrolled and to allow full scope to the initiative of each student. Mr. Nemzer with the collaboration of other specialists in International Studies Curriculum.

721. Europe. Three credit hours. Spring Quarter. Two one-hour class meetings each week and a periodic conference arranged for each student. Prerequisite, senior standing in International Studies Curriculum. Staff.

A pro-seminar on selected regions in Europe. Students will study the political, economic, social, and cultural institutions of a particular region, such as the Balkans, Germany, France, Scandinavia, etc.

731. Latin America. Three credit hours. Spring Quarter. Two one-hour class meetings each week and a periodic conference arranged for each student. Prerequisite, senior standing in International Studies Curriculum. Mr. Carlson with the collaboration of other specialists in International Studies Curriculum.

A pro-seminar on selected regions in Latin America. Students will study the political, economic, social, and cultural institutions of a particular region, such as Argentina, Central America, Amazon Basin, etc.

741. The Orient. Three credit hours. Spring Quarter. Two one-hour class meetings each week and a periodic conference arranged for each student. Prerequisite, senior standing in International Studies Curriculum. Mr. Hoffman with the collaboration of other specialists in International Studies Curriculum.

A pro-seminar in selected regions in the Orient. Students will study the political, economic, social, and cultural institutions of a particular region, such as India, Pakistan, Japan, China, Manchuria, Malaya, Burma, etc.

JOURNALISM

Office, 203 Journalism Building

PROFESSOR POLLARD, ASSOCIATE PROFESSOR WAGNER, MAGUIRE, AND HILL, ASSISTANT PROFESSORS BARTON AND BLACKMON, MR. O'BRIEN, MR. PAULY

401. Introduction to Journalism. Two credit hours. One Quarter. Autumn, Winter, Spring. Open to Freshmen. All instructors.

An introduction to journalism—newspapers, magazines, radio and television, and public relations publications. Lectures, assigned readings and written reports.

402. News Writing I. Three credit hours. One Quarter. Autumn, Winter, Spring. Two class hours and one two-hour laboratory period. Required of all journalism majors second year. Prerequisite, Journalism 401. All instructors.

An introduction to gathering and writing news.

403. News Writing II. Three credit hours. One Quarter. Autumn, Winter, Spring. Two class hours and one two-hour laboratory period each week. Required of alil Journalism majors second year. Prerequisite, Journalism 402. All instructors.

A continuation of News Writing I. Advanced work in reporting and writing with emphasis on feature writing.

508. Technical News Writing. Three credit hours. One Quarter. Autumn, Winter, Spring. Open to Juniors and Seniors only. A special section of this for non-journalism radio majors is offered in the Autumn Quarter only. Mr. O'Brien, Mr. Wagner.

A non-professional course in journalistic writing, designed especially for agricultural, technical, professional, and radio students. Presuming no prior journalism experience for the student it gives a brief survey of the field with elementary training in the gathering and writing of news and the writing of news-feature articles for trade and class publications. Emphasis is given to news in the agricultural, technical, professional, industrial, and business fields.

Not open to students who have credit for Journalism 403 or equivalent, or 602.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

605. News in Broadcasting I. Three credit hours. One Quarter. Autumn, Winter, Spring. Two class hours and one laboratory period each week. Prerequisite, Journalism 501 or permission of the instructor.

Preparation and broadcasting of news. Study of the development of the newscast and its use in the broadcasting industry, both radio and television.

606. News in Broadcasting II. Two credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour laboratory periods in the news departments of WOSU and/or WOSU-TV. Prerequisite, Journalism 605 and, for non-journalism majors, Journalism 508 or permission of the instructor. Fourth year. Mr. Wagner, Mr. Holsinger.

Practice in the writing and editing of news for broadcast.

607. Special Radio and Television News Programs. Three credit hours. Spring Quarter. Two class hours and assigned laboratory projects. Prerequisite, Jourualism 605 or permission of the instructor. Fourth year. Mr. Wagner.

Planning and production of special news programs such as the sportscast, the interview and the special event.

614. Law of the Press, Radio and Television. Five credit hours. One Quarter. Autumn and Winter. Five class hours. Required of all journalism majors. Fourth year. Prerequisite, Journalism 505 or equivalent. Mr. Pollard.

Origin and development of freedom of expression, history, principles, and provisions of the laws of libel and slander, copyright, and other statutes affecting newspapers, other publications, and the radio.

617. Public Relations I. Three credit hours. Autumn Quarter. Three class hours. Senior standing in Journalism or permission of the instructor. Mr. Maguire.

A survey of public relations—history and development; social political and economic implications; applications in business, industry, government, trade and professional associations and education, labor, social agencies, and political campaigns.

MATHEMATICS
Office, 306 University Hall

UNIVERSITY RESEARCH PROFESSOR RADO, PROFESSORS HELSEL, HALL, MANN, REICHELDERFER, MICKLE, AND RYSER, ASSOCIATE PROFESSORS WHITNEY, PEPPER, AND MILLER, ASSISTANT PROFESSORS JONES, KLEINFELD, ZIEBUR, FISHER, REEVES, AUSTIN, JANS, SHAPIRO AND SPECTOR, INSTRUCTORS AND ASSISTANTS

PROFICIENCY EXAMINATIONS

Students who have had previous informal training in the content of Mathematics 416, 417, 418, but for which no college credit has been attained, may obtain permission from the Department of Mathematics to take a proficiency examination in any of these subjects, provided that the total of Em credit obtained does not exceed thirty hours. These examinations will be given at 8 A.M. on the first Saturday of each Quarter in the office of the Department of Mathematics. Permission to take such examinations must be obtained at the department office no later than the preceding Thursday. To pass a proficiency examination in any one of these courses, a grade of not less than B is necessary, and this grade carries with it an Em grade for five hours.

REVIEW COURSES

Mathematics 400 and 401 are review courses covering essential aspects of high school mathematics. An additional fee will be charged for each review course and the credit hours of such courses are added to graduation requirements.

All entering students must take the O.S.U. Mathematics Test given during Orientation Week. This test covers arithmetic and high school algebra. A person who wishes to enroll in Mathematics 416 or Mathematics 421 must pass the algebra portion of the examination; otherwise he will be placed in a review course, either Mathematics 401 or Mathematics 400 depending on his test score.

One part of the O.S.U. Mathematics Test covers the material of Mathematics 400, Arithmetic and Elementary Algebra. In general, any student who fails this part of the examination will be required to take Mathematics 400 even though he may not plan to take any college level mathematics courses.

400. Arithmetic and Elementary Algebra. Five credit hours. Five credit hours will be added to graduation requirements of any student taking this course. One Quarter. Autumn, Winter, Spring. An additional fee will be charged for this course. All instructors.

This course consists of a review of arithmetic combined with topics from elementary algebra and geometry.

401. Elementary Algebra. Five credit hours. Five hours will be added to the degree program of any student taking this course. One Quarter. Autumn, Winter, Spring. An additional fee will be charged for this course. All instructors.

416. First Year College Mathematics. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, a satisfactory score in the algebra portion of the O.S.U. Mathematics Test or Mathematics 401. All instructors.

The sequence 416, 417, 418 emphasizes the fundamental concepts and cultural aspects of mathematics. It is designed to prepare students for admission to courses in calculus. Mathematics 416 deals with the development of algebra and geometry from their basic concepts.

Not open to students who have credit for Mathematics 421.

417. First Year College Mathematics. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 416. All instructors.

A continuation of Mathematics 416. This course presents the unification of algebra and geometry attained by means of analytic geometry. The meaning of a function is considered and trigonometric functions are discussed in detail.

Not open to students who have credit for Mathematics 422.

418. First Year College Mathematics. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 417. All instructors.

A continuation of Mathematics 417. The limit concept is introduced with simple examples from elementary calculus. Statistical functions and the elementary procedures of statistics are studied. Selected topics from modern mathematics are also presented.

Not open to students who have credit for Mathematics 423 or 440.

421. College Algebra. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, one year of high school algebra and a passing score in the pre-college mathematics test, or Mathematics 401. All instructors.

Exponents and radicals, graphs, theory of quadratic equations, determinants of third and fourth orders, radio, proportion, variation, logarithms, arithmetic progressions, geometric progressions, compound interest and annuities, permutations, combinations, binomial theorem, probability, partial fractions, inequalities.

Not open to students who have credit for Mathematics 416.

422. Trigonometry. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 421 or the permission of the department. All instructors.

Trigonometric functions and their graphs, functions of sum and difference of angles, equations and identities, formulas for solution of triangles, calculations using logarithmic tables. Complex numbers and their representation in a plane. Demoivre's theorem. Elements of spherical trigonometry.

Not open to students who have credit for Mathematics 417.

429. Mathematics of Finance. Five credit hours. Winter Quarter. Prerequisite, a satisfactory score in the algebra portion of the O.S.U. Mathematics Test, or Mathematics 401.

The principles of interest and discount with applications to annuities, sinking funds, capitalization, depreciation, valuation of bonds, building and loan associations.

435. Elementary Mathematical Statistics. Five credit hours. Spring Quarter. Prerequisite, a satisfactory score in the algebra portion of the O.S.U. Mathematics Test, or Mathematics 401.

Methods of testing hypotheses and estimation, chi-square test, t test, analysis of variance test. Estimation of mean, variance, correlation, and partial correlation coefficients; methods of sampling.

440. Calculus for Engineers. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 422 or 417 or the permission of the department. All instructors.

Limits, derivatives and differentials, integration and summation.

Not open to students who have credit for Mathematics 418.

536. Calculus. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 418.

The sequence 536, 537, 538 emphasizes the fundamental principles and methods of calculus. Although many applications are included, the main purpose of the sequence is to develop the calculus in a rigorous manner starting from specific hypotheses. Mathematics 536 deals with the concepts of function, limit, and derivatives.

Not open to students who have credit for Mathematics 541.

537. Calculus. Five credit hours. One Quarter. Winter and Spring. Prerequisite, Mathematics 536.

A continuation of Mathematics 536. This course has the definite integral and the antiderivative as central ideas.

Not open to students who have credit for Mathematics 542.

538. Calculus. Five credit hours. One Quarter. Autumn and Spring. Prerequisite, Mathematics 537.

A continuation of Mathematics 537. Differentiation and integration of function of several variables.

Not open to students who have credit for Mathematics 543.

541. Calculus for Engineers. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 440. All instructors.

A continution of Mathematics 440. The topics presented include conic sections, trigonometric functions, exponential and logarithmic functions, parametric equations, and polar coordinates.

Not open to students who have credit for Mathematics 536.

542. Calculus for Engineers. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 541. All instructors.

A continuation of Mathematics 541. Integration of elementary forms by various devices, applications of integration including first and second moments.

Not open to students who have credit for Mathematics 537.

543. Calculus for Engineers. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Mathematics 542. All instructors.

A continuation of Mathematics 542. Infinite series, space coordinates, partial derivatives, multiple integrals.

Not open to students who have credit for Mathematics 538.

MECHANICS

(See under Engineering Mechanics)

MILITARY SCIENCE

ARMY RESERVE OFFICERS TRAINING CORPS

Office, 204 Military Science Building

COLONEL CUNIN AND STAFF

In accordance wtih the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. Pursuant to this and through governmental contract, the University has established a Senior Division of the Army Reserve Officers Training Corps (ROTC). The Department of Military Science administers this unit and its 4 year program of instruction. The entire program is designed to produce qualified junior officers who have the character, ability and attributes essential to their progressive development as officers in the United States Army. Upon successful completion of ROTC, and attaining his baccalaureate degree, the graduate is eligible for a commission as a Second Lieutenant in the United States Army Reserve and, in the case of those of sufficiently high standing, for a like commission in the Regular Army.

By action of the Board of Trustees, the University, as a prerequisite for graduation, requires all males undergraduate students, unless otherwise excused, to complete successfully 6 Quarters of ROTC work during their first 6 Quarters of residence. Completion of the first two years of the Army ROTC Program fulfills this prerequisite.

The Program is in two parts: The Basic Course extending over the freshman and sophomore years and the Advanced Course during the junior and senior years. Successful completion of the Basic ROTC course, or credit in lieu thereof for prior equivalent training or service, is a prerequisite for the Advanced Course. Credit toward graduation is given for the Military Science courses on the same basis as for other courses offered in the University.

Enrollment in the Advanced Course is elective on the part of the student but is confined to those selected by the Professor of Military Science and Tactics. Such selection is based upon grades attained in Military Science and other academic work and upon demonstrated officer potential.

Students selected for and formally enrolled in the Advanced Course are paid approximately $27 a month, exclusive of a six-week period of summer camp, during which time they will receive approximately $106 plus travel allowance to and from camp. Upon graduating and receiving a commission the graduate may expect to: (a) serve on active duty for a two-year period and remain a member of a Regular or Reserve Component of the Army until the sixth anniversary of receipt of his commission; or (b) serve on active duty for 6 months and remain a member of a Reserve Unit until the eighth anniversary of his commission. The type of service to be required will vary from time to time depending upon the needs of the service then existing.

Details of courses of instruction are as follows:

MILITARY SCIENCE I (Freshmen)

401 (First Quarter), 402 (Second Quarter), 403 (Third Quarter). Courses must be completed, in sequence, prior to enrolling in the succeeding 400 series courses.

Two credit hours per Quarter. One two-hour recitation period and one hour of drill per week.

Organization of the Army and ROTC. Individual Weapons and Marksmanship. American Military History. School of the Soldier and Exercise of Command.

MILITARY SCIENCE II (Sophomores)

501 (First Quarter), 502 (Second Quarter), 503 (Third Quarter). Courses must be completed, in sequence, prior to enrolling in the succeeding 500 series courses.

Two credit hours per Quarter. One two-hour recitation period and one hour of drill per week.

American Military History. Map Reading. Crew Served Weapons and Gunnery. School of the Soldier and Exercise of Command.

MILITARY SCIENCE III (Juniors)

601 (Autumn Quarter), 602 (Winter Quarter), 603 (Spring Quarter). Three credit hours per Quarter. Two two-hour recitations and one hour of drill per week.

Crew served Weapons and Gunnery. Small Unit Tactics and Communications, Leadership. Military Teaching Methods. Organization and Missions of the Arms and Services. School of the Soldier and Exercise of Command.

MILITARY SCIENCE IV (Seniors)

701 (Autumn Quarter), 702 (Winter Quarter), 703 (Spring Quarter).

For all Military Science IV courses—three credit hours per Quarter. Two two-hour recitations and one hour of drill per week.

Operations. Logistics. Military Administration and Personnel Management. Service Orientation. School of the Soldier and Exercise of Command.

MUSIC

Office, 105 Hughes Hall

The School of Music is a member of the National Association of Schools of Music

PROFESSORS WEIGEL, DIERCKS, GILLILAND, HARDESTY, McBRIDE, McGINNIS, PHELPS, M. WILSON, ASSOCIATE PROFESSORS ANAWALT, DIERKER, EVANS, HADDAD, HELD, JONES, KUEHEFUHS, LIVINGSTON, MOONEY, SLAWSON, STAIGER, THOMAS, VEDDER, ASSISTANT PROFESSORS BARR, MUSCHICK, TITUS, MR. ANDERSON, MR. BECK, MISS BOMAR, MR. BURKHALTER, MR. DAHLINGER, MR. FRUCHTMAN, MR. GREEN, MR. HINTON, MISS JACKSON, MR. KEARNS, MR. MULLER, MR. PAGE, MR. POLAND, MRS. PORTER, MR. RAMSEY, MISS SEXTON, MR. C. SPOHN, MR. SUDDENDORF, MR. G. WILSON

CAMPUS MUSIC GROUPS

University campus music groups are open to all students in the University.

Students not specializing in music may enroll and receive credit toward any undergraduate degree for a total of six Quarter hours in Music A, B, C, or D.

To enroll in music organizations students should observe the following:

TRYOUTS FOR CAMPUS MUSICAL ORGANIZATIONS

FOOTBALL MARCHING BANDS—Open to men students only.

Monday, September 23, 8:00 A.M. *Rehearsal Hall.* See Mr. Evans.

Please note that this tryout is scheduled before the start of Orientation Week. Rehearsals begin the same day, and candidates should be prepared to spend mornings, afternoons, and evenings in preparation for the first football game. Conflicts with required Orientation Projects may be adjusted at the band rehearsals.

REGIMENTAL BAND—ROTC students only. See Mr. Evans.

UNIVERSITY CONCERT BAND—Men and Women students. See Mr. McGinnis.

UNIVERSITY ACTIVITIES BAND—Men and Women students. See Mr. Kearns.

UNIVERSITY ORCHESTRA—Men and women students. See Mr. Hardesty.

Thursday, September 26, 1:00 to 4:00 P.M. *Hughes Hall.* Brasses and Percussion, Room 306; Wood Winds, Room 308; Strings, Room 310.

Students should bring their own instruments to the tryouts except cellos, strings and brass basses, percussion instruments. A number of other instruments are also available for students who do not own their own.

UNIVERSITY CHORUS—Men and women students of all colleges.

Thursday, September 26; Friday, September 27; Monday, September 30 from 10:00 to 12 A.M. and 3:00 to 5:00 P.M. *Hughes Hall.* Room 109. See Mr. Diercks.

MEN'S GLEE CLUB.

Friday, September 27; Monday, September 30, from 2:00 to 5:00 P.M. *Hughes Hall,* Room 109. See Mr. Staiger.

WOMEN'S GLEE CLUB.

Thursday, September 26; Friday, September 27; Monday, September 30 from 1:00 to 4:00 P.M. *Hughes Hall,* Room 109. See Mr. Muschick.

SYMPHONIC CHOIR—Men and women students from all colleges.

Thursday, September 26; Friday, September 27; Monday, September 30 from 10:00 to 12:00 A.M. and 1:00 to 3:00 P.M. *Hughes Hall,* Room 204. See Mr. Diercks.

Conflicts—For those whose schedules conflict with any of the above, see Mrs. Mooney, Student Coordinator, Room 106G, *Hughes Hall.*

Music A. University Choruses. One credit hour. Three or more hours of rehearsal each week.

(Section) 1. University Chorus. Autumn, Winter, and Spring Quarters. Mr. Diercks.

Oratorio and larger choral works are studied and performed.

Open to students in any department of the University. Candidates for membership are to secure the written permission of the director after individual conference.

***(Section) 2. University Festival Chorus. Autumn, Winter, and Spring Quarters. Mr. Diercks.**

A community and campus group organized to give further experience in choral singing to those no longer attending the University or those in the University qualified for such opportunity.

Candidates may take this course for credit or non-credit in accordance with their needs. Membership is limited to experienced choral singers with admission after individual conference with the director.

(Section) 3. Symphonic Choir. Autumn, Winter, and Spring Quarters. Mr. Diercks.

Symphonic Choir is a concert organization singing a variety of literature. Admission is by audition only. Application should be made directly to the director. Most admissions occur in the Autumn Quarter.

(Section) 4. Women's Glee Club. Autumn, Winter, and Spring Quarters. Mr. Muschick.

Membership in this concert group is open to all women students in the University. Auditions are held at stated periods and vacancies in the club filled with the best available voices. Most admissions occur in the Autumn Quarter.

(Section) 5. Men's Glee Club. Autumn, Winter, and Spring Quarters. Mr. Staiger.

Membership in this concert group is open to all men students in the University. Auditions are held at started periods and vacancies in the club filled with the best available voices. Most admissions occur in the Autumn Quarter.

Music B. University Orchestras. One credit hour. Three or more hours of rehearsal each week. Prerequisite, consent of the director.

(Section) 1. University Symphonic Orchestra. Autumn, Winter, and Spring Quarters. Mr. Hardesty, Mr. Poland.

* Not given in 1957-1958.

The University Symphony Orchestra is a ninety piece orchestra of full instrumentation devoted to the preparation of standard and modern literature. The group gives at least three concerts each year.

Membership is open to all University students and personnel and to symphony players from in and about Columbus.

*(Section) 2. University Community Orchestra. Mr. Hardesty.

Designed for orchestra musicians from "in and about Columbus" who wish an outlet for their musical talent. Rehearsal and performance of standard orchestral literature.

Open for credit to students enrolled in Twilight School and for non-credit by permission of the director after tryout.

(Section) 3. University String Orchestra. Autumn, Winter, and Spring Quarters. Mr. Poland.

Emphasis on orchestral techniques and department. Study materials drawn from the standard chamber orchestra literature. A selected group for performance at University convocations, assemblies and chamber music concerts.

Open to students of any year or department in the University. Admission by tryout and approval of the director.

Music C. University Marching Band. One credit hour. Three or more hours of rehearsal each week. Admission by tryout and consent of the director. Open to men students of any year or department of the University.

(Section) 1. University Football Marching Band. Autumn Quarter. Mr. Evans and others.

The University Marching Band is a selected group of 120 brass and percussion players which performs at football games and rallies during the Autumn Quarter.

(Section) 2. Regimental Band. Winter and Spring Quarters. Mr. Stoll.

Music D. University Bands. One credit hour. Three or more hours of rehearsal each week. Prerequisite, consent of the director.

(Section) 1. The University Concert Band. Autumn, Winter, and Spring Quarters. Mr. McGinnis, Mr. Kearns.

A selected group of limited membership devoted to the preparation and performance of the best band literature. The group gives public concerts and supplies music for University functions.

The membership is open to any student of any year or department in the University, but is limited to performers of superior ability.

(Section) 2. The University Activities Band. Autumn, Winter, and Spring Quarters. Mr. Evans, Mr. Kearns.

An organization whose purpose is to provide band participation for those students who are unable, for one reason or another, to play in the University Concert Band. The group gives public concerts and supplies music for University functions.

Membership is open to students of any year or department of the University with the permission of the director.

Music F. University Small Ensembles. One credit hour. Two or more hours of rehearsal each week. Admission by tryout and consent of the respective instructor.

(Section) 1. Opera. Autumn, Winter, and Spring Quarters. Mr. Muschick.

(Section) 2. Vocal Ensemble. Autumn, Winter, and Spring Quarters. Mr. Diercks.

*(Section) 3. Radio and Television Ensembles. Autumn and Spring Quarters.

(Section) 4. String Ensembles. Autumn, Winter, and Spring Quarters.

(Section) 5. Woodwind Ensembles. Autumn, Winter, and Spring Quarters.

(Section) 6. Brass Ensembles. Autumn, Winter, and Spring Quarters.

(Section) 7. Miscellaneous Ensembles. Autumn, Winter, and Spring Quarters. Music staff.

* Not given in 1957-1958.

404. The Appreciation of Music. Three credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Three lectures each week. Mr. Fruchtman, Miss Dierker, Mr. Ramsey.

For the music listener with little or no formal training in music. Lectures and illustrations in explanation of the principle elements involved in intelligent listening. Music illustrations selected primarily from standard concert repertoire.

Not open for credit to students in Curricula I, II, III, or V.

405. Introduction to Music Literature. Three credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Three lectures each week. Mr. Wilson, Mr. Fruchtman.

For those with little or no training in music. An examination of the materials used in music and an analysis of representative works. Training in listening.

NATURAL RESOURCES

101 Townshend Hall

Various aspects of natural resource conservation are considered in the course offerings of a number of departments. Several departments: Agronomy, Forestry, Agricultural Economics and Rural Sociology, and Zoology and Entomology supervise specialization sequences in natural resources. These include sequences in farm planning, soil conservation and wildlife management. A two-year preparatory program in forestry is offered. Advisers in these departments should be consulted for student guidance. A Natural Resources Institute described on page 35 in the Bulletin has been established to stimulate and coordinate teaching and research in conservation. Students interested in this program should consult with its director.

There are listed below a number of courses in natural resource conservation which may, among others, be of interest to students interested in this field. Their descriptions should be consulted under the offerings of the appropriate departments.

Agricultural Economics 502.	Farm Management
Agricultural Economics 615.	Land Economics
Agricultural Engineering 507.	Farm Drainage, Erosion Control, and Irrigation
Agricultural Engineering 517.	Farm Water Management
Agricultural Engineering 617.	Advanced Mechanical Control of Farm Water
Agronomy 604.	Soil Erosion and its Control
Agronomy 799.	Workshop in Soil and Water Conservation
Civil Engineering 620.	Environmental Sanitation
Civil Engineering 703.	Water Supply Engineering
Civil Engineering 716.	Sewerage
Civil Engineering 719.	Industrial Wastes Treatment
Conservation 401.	Introduction to Conservation of Basic Natural Resources
Conservation 514.	Conservation Agencies
Conservation 561.	Field Experience in Conservation
Education 682.	Field Laboratory in Conservation Education
Geography 604.	Conservation of Natural Resources
Geology 533.	Geology of Water Resources
Forestry 402.	Farm Forestry
Forestry 410.	Principles of Forestry
Zoology 640.	Wildlife Conservation
Zoology 641.	Methods and Techniques in Wildlife Management
Zoology 643-644-645.	Wildlife Conservation Conference

NAVAL SCIENCE

Naval Reserve Officers Training Corps
Office, The Armory

CAPTAIN J. A. JORDAN, USN, AND STAFF

Regular and Contract NROTC Students normally take Naval Science courses during four consecutive years.

The sequence of courses is the same for all officer candidate students for the first two years. At the end of the second year, officer candidate students have the option of selecting specilization in Supply or Marine specialties, in which case, there is a variation in course selection during the final years.

In the case of the Contract Program, the student is unsubsidized except for uniforms and an allowance of $27 per month in the junior and senior years. Students interested in this program should make application to the Professor of Naval Science prior to the closing of the Autumn registration. These students are required to participate in only one Summer cruise activity. They are commissioned in the Reserve upon graduation, but serve only two years on active duty with the Navy.

Students entering the Regular NROTC Program are pre-selected through nation-wide competitive examination in December of the previous year. They become candidates for Regular commissions in the Navy or Marine Corps and receive a four-year scholarship. These students also participate in three summer activities, two of which are cruises at sea in ships of the Navy and the third is a field trip to amphibious and aviation bases. Upon graduation and commissioning, they serve four years on active duty.

During their senior year, Regular and Contract NROTC students may apply for flight training upon commissioning.

Students from high school and colleges who are qualified may apply for either program.

Any student may enroll in a Naval Science course on approval of the Professor of Naval Science.

Normal sequence of courses is as follows:

First Year:	All Officer candidates—441, 442, 443
Second Year:	All Officer candidates—541, 542, 653
Third Year:	Line Candidates—641, 642, 643 Marine Candidates—651, 652, 653 Supply Candidates—661, 662, 663
Fourth Year:	Line Candidates—744, 745, 743 Marine Candidates—751, 752, 763 Supply Candidates—761, 762, 743

441. Naval Orientation. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week.

The study of Naval Orientation covering customs, discipline, organization, vessels of the U. S. Navy, seamanship, communications, and tactics.

442. Naval History. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week.

A continuation of Naval Science 441 . Naval History covering the period up to World War I with particular emphasis on the principles of war and influence of sea power upon history.

443. Naval History. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week.

A continuation of Naval Science 442. Naval History covering the period from the beginning of World War I up to the present time.

541. Naval Weapons, Part I. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week.

A broad study of naval ammunition and armament with particular emphasis given to dual purpose weapons. Introduction to the surface fire control problem.

542. Naval Weapons, Part II. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week.

Analysis of the elements of both surface and antiaircraft problems in the control of gunfire, including the basic mechanism used in the mechanical solution and the basic fire control systems. Analysis of battery alignment methods and principles and use of radar.

543. Naval Weapons, Part III. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week.

Organization and functions of combat Information Center, with emphasis on coordination,

A broad study of rockets, guided missiles, mines, and torpedoes. Principles of underwater sound and the anti-submarine warfare problem. Naval gunfire support and its relationship to amphibious warfare.

641. Naval Engineering. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week.

Broad general concept of the fundamental theory behind the construction and operation of a typical modern naval engineering installation. Relation of the elements of the installation one to another.

642. Naval Engineering and Introduction to Navigation. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week.

Basic theory of the construction and operation of the Diesel Engine. Principles of ship stability and buoyancy in the practice of damage control. Dead reckoning and piloting navigation.

643. Navigation. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week.

Basic and advanced celestial navigation; celestial methods in solution of navigational problems.

651. Evolution of the Art of War. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for commission in the U. S. Marine Corps only.

A survey of the historical development of weapons, tactics, and material, and an illustration of the classic principles of war by a study of selected battles and campaigns from Alexander to Appomattox.

652. Evolution of the Art of War and Basic Strategy and Tactics, Part I. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for commission in the U. S. Marine Corps only.

A continuation of the evolution of the art of war from Appomattox to present time.

653. Basic Strategy and Tactics, Part II. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for commission in the U. S. Marine Corps only.

A survey of modern strategical and tactical principles, using contemporary historical events as illustrative material.

661. The Supply Corps, Organization and Logistics, and Naval Finance. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for a commission in the Supply Corps only.

Introduction to the Navy, The Supply Corps, Logistics, and Naval Finance, including property, appropriation and cost accounting.

662. Naval Accounting and Basic Supply Afloat. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for a commission in the Supply Corps only.

Further study of the Naval non-industrial accounting system ashore and a study of material identification, classification, and procurement afloat, including the relating accounting records.

663. Advanced Supply Afloat. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for a commission in the Supply Corps only.

A continuation of the study of supply afloat including the naval accounting system afloat and the receipt, storage, and stock control afloat.

743. Naval Administration and Leadership. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week.

Uniform code of military justice. The psychology of human relations, and the techniques of leadership; career planning.

744. Naval Operations. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week.

To acquaint the student with those responsibilities which will face him in shipboard operations, such as meteorology, relative motion, tactical communications and instructions, and rules of the nautical road.

745. Naval Operations and Introduction to Naval Administration. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week.

A study of shipboard communications as a part of the Operations Department. A study of problems of Administration and organization encountered aboard ship.

751. Amphibious Warfare, Part I. Three credit hours. Autumn Quarter.

A brief history of amphibious warfare and its development; a study of the principles of amphibious warfare technique.

752. Amphibious Warfare, Part II. Three credit hours. Winter Quarter.

A continuation of the study of the principles of amphibious warfare techniques and an examination of the application of these principles in selected examples of modern history.

753. Leadership, Uniform Code of Military Justice. Three credit hours. Spring Quarter. Three recitations and two one-hour laboratory periods each week. For candidates for commission in the U. S. Marine Corps only.

The psychology of human relations and techniques of leadership as applied by Marine leader; uniform code of military justice; career planning.

761. Ship's Store and Clothing and Small Stores. Three credit hours. Autumn Quarter. Three recitations and two one-hour laboratory periods each week. Prerequisite, Naval Science 661, 662, and 663. For candidates for commission in the Supply Corps only.

A study of ship's store and clothing supply afloat, including their accounting, organization, functions, techniques, and related reports.

762. Commissary. Three credit hours. Winter Quarter. Three recitations and two one-hour laboratory periods each week. Prerequisite, Naval Science 661, 662, 663, and 761. For candidates for a commission in the Supply Corps only.

A study of commissary, including organization, accounting, function, techniques and related reports.

PHILOSOPHY

Office, 10 University Hall

PROFESSORS NELSON, EVANS, AND WEITZ, ASSOCIATE PROFESSORS FOX AND HINSHAW, ASSISTANT PROFESSORS REITHER, DONEY, AND NEMETZ, INSTRUCTORS AND ASSISTANTS

400. Types of Philosophy. Three credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Staff.

An elementary study of the essentials of the various types of philosophy which have been influential in world literature, history, and science; Naturalism, Pragmatism, Dualism, Idealism, Mysticism.

Not open to students who have credit for Philosophy 401.

401. Introduction to Philosophy. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisites. All instructors.

The meaning and scope of philosophy, its typical problems and theories, its relations to the special sciences and to morality and religion.

Not open to students who have credit for Philosophy 400.

402. Introduction to Logic. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Staff.

Deductive and inductive logic; conditions of clear statement and valid reasoning; propositions, contradiction, definition, inference, types of argument, detecting and avoidance of fallacies; the methods by which theories and laws are established in the sciences.

405. Introduction to Ethics. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Staff.

An examination of the theoretical grounds for moral judgments. The course concerns itself with questions such as the ultimate nature of right and wrong, good and evil, and suggests tools for the development of adequate criteria for moral values.

406. Religious Questions. Three credit hours. Spring Quarter. No prerequisite. Mr. Evans.

An elementary non-sectarian study of the nature and significance of religion; an examination of the individual and social bases of religious experiences.

510. Introduction to Social Ethics. Five credit hours. Winter Quarter.

Selected issues in ethical theory and their bearing on the problem of the nature of a good social order of right social action. The rival ideals of aristocracy, fascism, communism, and democracy.

Not open to students who have credit for Philosophy 656.

516. Philosophy of Human Nature. Three credit hours. One Quarter. Autumn and Spring. For Sophomores, Juniors, and Seniors. No prerequisite. Mr. Reither.

An introduction to the philosophy of man, its foundation in life and culture; the problems of values and standards; the various theories of human nature—dualism, materialism, spiritualism. The relation of humanistic philosophy to social philosophy and to the philosophies of history and religion.

PHOTOGRAPHY

Office, 4 Brown Hall

PROFESSOR DAVIS, ASSOCIATE PROFESSOR WAGNER, ASSISTANT PROFESSOR BINAU

511. Photography. Three credit hours. One Quarter. Autumn, Winter, Spring. Two lectures and two two-hour laboratory periods each week. Not open to Freshmen. Mr. Binau.

Lectures and practice in the fundamentals of photographic processes. The use of the camera, characteristics of photographic emulsions, light filters and their uses, exposure problems, processing of negatives, contact printing, photographic optics, photographic chemistry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

615. Motion Picture Photography. Three credit hours. Winter Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Photography 510, or 511, or 625, or permission of the instructor. Mr. Wagner.

An advanced course in motion picture production, with special emphasis on the 16mm. field. The mechanics and principles of specialized motion picture cameras, film editing, photographic sound recording and reproduction, and production planning.

Not open to students who have credit for Photography 515.

650. Advanced Photography. Three credit hours. Winter Quarter. Two lectures and two two-hour laboratory periods each week. Prerequisite, Photography 511 or 625. Mr. Binau.

A continuation of Photography 511 or 625, dealing mainly with projection printing, special effects, photo-engraving, lens testing, color photography, miniature camera work.

PHYSICAL EDUCATION

MEN'S DIVISION

Office, 124 Physical Education Building

PROFESSORS LARKINS, OBERTEUFFER, SNYDER, ASHBROOK, DANIELS, CUSHMAN, L. HESS, PEPPE, DUFFEE, STALEY, MOONEY, AND HAYES, ASSOCIATE PROFESSORS C. WIRTHWEIN, HIXSON, STAHL, KAROW, AND KOVACIC, ASSISTANT PROFESSORS BENNETT, BIGGS, H. WIRTHWEIN, HENDRIX, KAPLAN, MONTONARO, STATEN, HEWLETT, FREDERICKS, T. W. TAYLOR, AND MAND, INSTRUCTORS AND ASSISTANTS

WOMEN'S DIVISION

Office, 201 Pomerene Hall

PROFESSORS PALMER, ARMSTRONG, SLIEPCEVICH, AND D. WIRTHWEIN, ASSOCIATE PROFESSORS MORDY, ALLENBAUGH, GILMAN, WATSON, AND STEIN, ASSISTANT PROFESSORS ALKIRE, HARDING, YOST, RUPERT, HAYS, CRAFTS, AND SCHROEDER, INSTRUCTORS AND ASSISTANTS

HYGIENE

400. Hygiene (Men and Women). One credit hour. All Quarters. Men—one meeting each week. Women—twelve class meetings per Quarter. Required of every Freshman unless Physical Education 410 is taken during the first year of residence in the University. Sections for men, Mr. Cushman; section for women, Miss Armstrong.

This course deals with the factors which are significant in personal health. The emphasis is placed on student health problems as a basis for discussion.

PHYSICAL EDUCATION

401-402-403. Physical Education (Men). One credit hour. All Quarters. Two hours each week. Required of every Freshman. Staff.

Opportunity in these courses is given to elect, from a large number of group and individual sports and dance, one activity which will contribute to the organic development and the recreational life of the student. Instruction in the techniques of play, the rules and strategies and the social behaviors involved in each activity are given. Special instruction for the physically handicapped is available. All work in these courses is based on a physical examination at the beginning of the entering Quarter.

404. Physical Education (Men). No credit. All Quarters. Two hours each week. This course may be taken not to exceed three times.

A continuation of Physical Education 401-402-403.

421-422-423. Physical Education (Women). One credit hour. All Quarters. Two hours each week. Required of every Freshman. Staff.

Opportunity in these courses is given to elect, from a large number of group and individual sports and dance, one activity which will contribute to the organic development and the recreational life of the student. Instruction in the techniques of play, the rules and strategies and the social behaviors involved in each activity are given. Special instruction for the physically handicapped is available. All work in these courses is based on a physical examination given at the beginning of each year.

425-426-427. Physical Education (Women). One credit hour. All Quarters. Three hours each week. Required of all Sophomores. Staff.

A continuation of Physical Education 421-422-423.

ELECTIVE COURSES FOR MEN DISQUALIFIED FOR MILITARY AND AIR SCIENCE

525-526-527. Physical Education. One credit hour. All Quarters. Three hours each week. Open to Freshmen disqualified for elementary courses in Military and Air Science. Staff.

These courses are similar in content to Physical Education 401-402-403.

528-529-530. Physical Education. One credit hour. All Quarters. Three hours each week. Open to Sophomores disqualified for elementary courses in Military and Air Science. Staff.

These courses offer advanced training and instruction in various athletic sports.

PHYSICS AND ASTRONOMY

PHYSICS

Office, 107 New Physics Building

PROFESSORS H. NIELSEN, WILLIAMS, AND COOPER AND STAFF

411. General Physics: Mechanics, Wave Motion, and Sound. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, passing grade on algebra portion of O.S.U. Mathematics test or satisfactory completion of Mathematics 401. Mr. C. Neilsen and staff.

412. General Physics: Heat, Light, Spectroscopy. Five credit hours. Winter Quarter. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 411. Mr. Cooper and staff.

413. General Physics: Magnetism, Electricity, and Electronics. Five credit hours. One Quarter. Autumn and Spring. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 411. Mr. C. Neilsen and staff.

420. Descriptive Meteorology. Five credit hours. Autumn Quarter. Four recitations and one two-hour laboratory period each week. No prerequisite.

An introductory course in meteorology for increasing the understanding of local weather phenomena and describing commonly observed weather changes. The laboratory period includes instrumental observations, the use of meteorological data and the study of weather maps.

431. General Physics of Engineers and Physical Scientists: Mechanics. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, one entrance unit in physics or Physics 411; concurrent, Mathematics 536 or 541. Mr. Williams and staff.

432. General Physics for Engineers and Physical Scientists: Heat, Sound, and Light. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 431 and Mathematics 536 or 541. Mr. Williams and staff.

433. General Physics for Engineers and Physical Scientists: Electricity and Magnetism. Five credit hours. One Quarter. Autumn, Winter, Spring. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 431 and Mathematics 536 or 541. Mr. Williams and staff.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

643. General Meteorology. Three credit hours. Winter Quarter. Prerequisite, fifteen hours of natural science, including one of the following courses: Agronomy 501; Botany 402; Geography 403; Geology 402; Physics 412 or 432; Zoology 402.

The study of the atmosphere and its phenomena. Personal observation and prediction of weather events.

Not open to students who have credit for Physics 510.

ASTRONOMY

Office, Emerson McMillin Observatory

PROFESSOR HYNEK

500. Descriptive Astronomy. Five credit hours. One Quarter. Autumn and Spring. No prerequisite. Mr. Hynek.

This is an introductory course designed to give an appreciation of the place of astronomy in man's cultural and scientific development. Chief emphasis is on the descriptive and historical aspects of the subject. This course is suitable for students who have time for only one Quarter's work in astronomy.

Not open to students who have credit for Astronomy 401 or 402.

PHYSIOLOGY

Office, 312 Hamilton Hall

PROFESSORS OGDEN, ANGERER, BOZLER, BRECHER (RESEARCH), HITCHCOCK (RESEARCH), SAPIRSTEIN, AND MYERS (RESEARCH), ASSOCIATE PROFESSORS BEMAN, GRUBBS, KING, AND STACY, ASSISTANT PROFESSORS ALLISON, BROWNELL, COULTER, HULL, LESSLER, NISHIKAWARA, TOMASHEFSKI, CARTER, LIPETZ, STOW

421. Introduction to Physiology. Five credit hours. One Quarter. Autumn and Spring. Four lecture or recitation and three laboratory hours each week. No prerequisite. This course meets the needs of students in nursing, majors in physical education and home economics. Staff.

A brief survey of the structural organization of the body from the cell to organism and of the properties of living matter is followed by a description of the structure and a study of the function of the muscular, nervous (including sense organs) and digestive systems (including energy and food metabolism).

Students having earned credit in Physiology 506 and 507 may not enroll for credit thereafter in Physiology 421 or 422.

422. Introduction to Physiology. Five credit hours. One Quarter. Winter and Summer. Four lecture or recitation and three laboratory hours each week. Prerequisite, Physiology 421. This course meets the needs of students in nursing, majors in physical education and home economics. Staff.

A continuation of Physiology 421. The structures and functions involved in a study of blood and other body fluids, renal system, respiration, control of body temperature, and the integrative action of the endocrine organs.

Students having earned credit in Physiology 506 and 507 may not enroll for credit thereafter in Physiology 421 or 422.

506. Intermediate Physiology. Five credit hours. Winter Quarter. Four lectures or recitations and three laboratory hours each week. Prerequisite, two Quarters in chemistry, and one Quarter in anatomy. Staff.

The concepts and principles involved in the activities of muscles and nerves; control and peripheral nervous system, including sense organ; secretion, digestion and motility of digestive tract; and energy and food metabolism.

Students having earned credit in Physiology 421 and 422 may not enroll for credit thereafter in Physiology 506 and 507.

507. Intermediate Physiology. Five credit hours. Spring Quarter. Four lectures or recitations and three laboratory hours each week. Prerequisite, Physiology 506 or equivalent. Mr. Angerer and staff.

A continuation of Physiology 506. The concepts and principles involved in the functions of body fluids (blood, interstitial, cerebrospinal), heart and blood vessels, respiration, acid-base mechanisms, kidney and sweat glands, control of body temperature and integrative action of the endocrine organs.

Students having earned credit in Physiology 421 and 422 may not enroll for credit thereafter in Physiology 506 or 507.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Advanced Mammalian Physiology. Five credit hours. One Quarter. Winter. Four lectures and one three-hour laboratory period each week. Prerequisite, inorganic and organic chemistry, one year college physics, and one year biological science or permsision of the departmnet chairman; Winter Quarter, staff.

Advanced physiology of nerve-muscle, central nervous system, special senses, and digestion and metabolism.

602. Advanced Mammalian Physiology. Five credit hours. Spring Quarter. Four lectures and one three-hour laboratory period each week. Prerequisite, inorganic and organic chemistry, one year college physics, and one year biological science or permission of department chairman. Spring Quarter, staff.

Advanced physiology of body fluids and excretion, respiration, digestion and metabolism, and endocrines.

648. Physical Instrumentation for Biologists. Three credit hours. Spring Quarter. One lecture and two three-hour laboratory periods each week. Prerequisite, one year of college physics and elementary physiology or its equivalent. For Graduate Students, satisfactory course work in physical chemistry. Mr. Stacy and staff.

This course covers the theory and practical application of physical instruments used in biological studies, including elementary electronics. The student handles and learns to use stimulators, amplifiers, cathode ray oscilloscopes, recorders, and other electrical, optical, and mechanical instruments.

POLITICAL SCIENCE

Office, 104 University Hall

PROFESSORS MANSFIELD, WALKER, HELMS, AUMANN, AND HEIMBERGER, ASSOCIATE PROFESSORS NEMZER, KAWAI, AND SPITZ, ASSISTANT PROFESSORS JAFFA AND HERSON, MR. MILLER, MR. LOTT, MR. CHRISTOPH, MR. KETTLER, MR. MARSHALL AND ASSISTANTS

Elementary Course Offerings

Principal Audience	Commerce and Education	Arts	Engineering and Agriculture
Prerequisite	None	History 421-422-423	None
First Course	Political Science 401 (5 hours) American National Government	(5 hours) Fundamentals of Government Political Science 507	Political Science 599 (3 hours) Introduction to Political Science
Normal Sequence	Political Science 510 (5 hours) American State and Local Government or Political Science 509 (5 hours) Foreign Governments	Political Science 508 (5 hours) Government in the United States or Political Science 509 (5 hours) Foreign Governments	Political Science 595 (3 hours) Local Government in the United States

Upper Class Course Prerequisites

Unless otherwise specified in course descriptions below, two courses in political science, or a declared major in a social science, or the consent of the course instructor. In the case of Arts College juniors and seniors, the history and social science requirements of the B.A. curriculum take the place of these prerequisites.

The elementary courses in the department provide sequences of 6, 10, or 15 hours, appropriate to differing interests and curriculum and schedule requirements. One 10-hour sequence (401 and 510) takes American government as its focus; another (401 and 595) keeps to the national government level, here and abroad. A 6-hour sequence (599 and 595) moves from basic principles to manifestations of government close to home. A 10 or 15-hour sequence (507 and 508 or 509, or both) begins with institutions and ideas, and covers systematically the major national governments of the world. Inter-college and off-campus transfer students may enter the second course in any of these sequences from the first course in either of the others.

401. American National Government. Five credit hours. One Quarter. Autumn, Winter, Spring. Department staff.

Organization and functions of the national government. The Constitution; nature of the federal system; citizenship and popular participation in governing; extent and character of national powers; changing relations of the national government to the states and to the individual.

Not open to students who have credit for Political Science 507.

510. American State and Local Government. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, one course in political science. Mr. Herson and staff.

A general study of the organization and functions of the states and their municipal subdivisions in the United States. The constitutional bases of state government; political parties and popular control; the suffrage; the state legislature and its work; the office of governor; judicial and legal problems.

595. Local Government in the United States. Three credit hours. One Quarter. Winter and Spring.

County, municipal and special governmental districts comparatively treated; their legal status, political significance, governmental structure and functions; their relationships with state and national governments.

599. Introduction to Political Science. Three credit hours. One Quarter. Autumn, Winter, Spring. Not open to students with previous credit in political science. Mr. Lott and staff.

An acquaintance with the most significant political institutions, processes and problems including: political parties, elections, legislation, civil service, and courts; the parliamentary and authoritarian governments of Europe; international government. Lectures, readings, and discussion.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

Unless otherwise specified in the course descriptions below, and except for Arts College students with Junior standing, prerequisites for 600 level courses are two courses in political science, or a declared major in another social science, or the consent of the instructor.

607. American Municipal Government. Five credit hours. Autumn Quarter. Mr. Herson, Mr. Walker.

A comparative study of modern municipalities in the United States; their social significance; their governmental structure; their relation to the state; the experience with government by council, mayor, commission, and manager; methods of popular participation.

Not open to students who have credit for Political Science 500 or 595.

609. Government of Ohio. Three credit hours. Winter Quarter. Mr. Walker, Mr. Aumann.

Constitution, structure and functions: the electoral system; finance and personnel; judiciary and law enforcement; organization and conduct of administrative programs; state relations with local governments.

624. American Political Ideas. Three credit hours. Winter Quarter. Three lecture and discussion meetings a week. Mr. Spitz.

An analysis of American ideas on law and government, authority and liberty, oligarchy and democracy, from the Puritans to the present day.

POULTRY SCIENCE

Office, Poultry Administration Building

PROFESSORS WINTER, DAKAN, JAAP, CRAY, AND McCARTNEY, ASSISTANT PROFESSORS MARSH AND NABER, MR. BLETNER AND MR. GOODMAN

401. Poultry Production. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures and two two-hour laboratory periods each week. Mr. Winter, Mr. Jaap, Mr. Cray, Mr. Bletner, Mr. Goodman.

An introductory course covering all phases of poultry production and marketing. A one-day field trip is required.

409. Poultry Feeds and Feeding. Three credit hours. One Quarter. Autumn and Winter. Three lecture periods each week. Mr. Naber.

A study of nutrients, feedstuffs, compounding of rations and feeding practices for chickens, turkeys, and other avian species. A field trip is required.

410. The Biology of the Domestic Fowl. Three credit hours. Winter Quarter. Two lectures and one two-hour laboratory period each week. Mr. Jaap.

Characteristics of fowls; functions and structure of plumage, skin, muscle, skeleton, nervous, vascular, digestive, urinary, reproductive and endocrine systems, including embryology of the chick.

413. Poultry Farm Sanitation. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Mr. Marsh.

The principles underlying sanitation and disease prevention as applied to the poultry farm.

416. Poultry Judging and Selection. Three credit hours. Autumn Quarter. Two lectures and one two-hour laboratory period each week. Mr. Jaap.

Selection of individual breeding birds for farm flocks and hatcheries for production of meat and eggs.

417. Turkey Production and Management. Three credit hours. Winter Quarter. Three lectures each week. Mr. Goodman.

Turkey breeds and breeding, incubation, brooding, feeding, disease control and marketing. A field trip is required.

420. Commercial Broiler and Pullet Production. Three credit hours. Winter Quarter. Three lectures each week. Mr. Bletner.

Production of broilers and laying stock. Type of chicks, brooding equipment, feed conversion and economy of mass production. A field trip is required.

521. Poultry Plant Experience. Five credit hours. Autumn, Winter, and Spring Quarters. Staff.

Ten weeks practical experience, including written report and completion of a special problem in an approved poultry plant specializing in one of the following: (a) Breeding; (b) Chick production; (c) Marketing; (d) Feed manufacturing and distribution.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Poultry Nutrition. Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Agricultural Biochemistry 410 or equivalent and Poultry Science 401. Mr. Naber.

Fundamentals and laboratory techniques for determining nutritive requirements. Evaluation of feedstuffs and rations.

606. Poultry Genetics. Five credit hours. Spring Quarter. Five lecture-conference periods each week. Prerequisite, Poultry Science 401 and Zoology 403. Mr. Jaap.

Genetic variation in body, growth, reproduction, and the egg quality. Breeding methods used in poultry production.

610. Hatchery Management. Three credit hours. Winter Quarter. Three lecture-conference periods each week. Prerequisite, Poultry Science 401 and and ten hours of economics or agricultural economics. Mr. Cray.

Hatchery equipment, egg supply, flock improvement programs, sanitation, operation of incubators, chick sexing and hatchery management. Chick prices and hatchery costs; methods of selling chicks. A field trip is required.

615. Poultry Plant Management. Five credit hours. Spring Quarter. Five lecture-conference periods each week. Prerequisite, Poultry Science 401 and ten hours of economics or agricultural economics. Mr. Cray.

Considerations involved in establishing a poultry business. Economic and management problems arising in the operation of specialized poultry enterprises. Field trips will be used as class problems.

618. Processing Poultry Products. Three credit hours. Autumn Quarter. One lecture and two two-hour laboratory periods each week. Elective in Poultry Science Curricula. Required in Food Technology Curricula. Prerequisite, fifteen hours of chemistry and fifteen hours of biological science including bacteriology. Mr. Winter.

Preparation of egg and poultry meat products, including grading, inspection, packaging and preservation of quality. Utilization of inedible poultry by-products. A field trip is required.

Not open to students who have credit for Poultry Science 518.

620. Marketing Poultry Products (see Agricultural Economics 620). Three credit hours. Winter Quarter. Three recitations each week. Prerequisite, Poultry Science 401, ten hours of economics or agricultural economics. Mr. Cray.

Functions of marketing agencies and relation to marketing costs. Types and location of markets with respect to production. Function of storage, market reporting and marketing controls. Marketing poultry products as related to the consumer. A field trip is required.

NOTE: This course will also count toward a major in Agricultural Economics.

Not open to students who have credit for Poultry Science 603.

701. Special Problems in Poultry Science. Two to five credit hours. Autumn, Winter, and Spring Quarters. Staff.

This course is limited to advanced students and must be arranged with the professor in charge. Each student will be required to make an exhaustive study of some particular phase of poultry husbandry and write a thesis of his study and research. The work must comprise in part some original investigations by the student.

750. Poultry Seminar. One credit hour. Autumn, Winter, and Spring Quarters.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

PSYCHOLOGY

Office, 325 Arps Hall

PROFESSORS BURTT, PRESSEY, TOOPS, RENSHAW, ENGLISH, SHARTLE, ROBINSON, WICKENS, KELLY, WHERRY, FITTS, ROTTER, KINZER, HORROCKS, FLETCHER, BURNETT, ASSOCIATE PROFESSORS STOGDILL, MEYER, PEPINSKY, AND RATOOSH, ASSISTANT PROFESSORS WISPE AND SCODEL, INSTRUCTORS AND ASSISTANTS

401. General Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five meetings each week. Lectures, discussions, laboratory exercises, and reports. All instructors.

An introductory course and fundamental to all subsequent courses in the department. This course, together with Psychology 402, undertakes to present a survey of the whole field of human psychology. This includes a study of the experimental findings in infant behavior and the subsequent development of adult modes of response, such as emotion, attention, habit, thinking, and the nature and development of personality.

The facts and principles of human behavior pertinent to everyday life are stressed. The student is required to develop skill in the practical applications of experimental findings in the fields of infant behavior, motivation, attention, and emotion.

402. General Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five meetings each week. Lectures, discussions, laboratory exercises, and reports. All instructors.

A continuation of Psychology 401. Further emphasis on the development of a scientific attitude toward personal psychological problems in the fields of learning, thinking, intelligence and personality.

407. Educational Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lecture hours each week. Lectures, discussions, laboratory exercises, and reports. Prerequisite, Psychology 401. All instructors.

The course begins with a brief study of the capacities, abilities, and interests of children, individual differences and total development through the school years. It then proceeds to a study of learning and the results of investigations regarding the progress of learning in school. Throughout the course, experimental data are stressed and practical problems emphasized, with frequent laboratory exercises.

Not open to students who have credit for Psychology 404.

409. Introduction to Applied Psychology. Three credit hours. Spring Quarter. Three lecture hours each week. Prerequisite, Psychology 401. Mr. Burtt.

A systematic discussion of problems, methods, and typical results of psychology in the practical fields of medicine, law, education and business.

411. Psychology of Effective Student Adjustment. Three credit hours.‡ One Quarter. Autumn, Winter, Spring. Lectures, reading, reports, individual conferences. Mr. Kinzer, Mr. Robinson.

The psychological principles of effective learning will be not only taught but demonstrated and applied under the supervision of the instructor. Students who feel themselves handicapped by ineffective habits of study or poor adjustment to college are urged to enroll in this course.

The psychological problems involved in the transition from control by adults to self-management will be considered. The resources of clinical psychology will be made available for the solution of difficulties of individual adjustment.

For further details see Secretary of the College.

521. Social Psychology. Three credit hours. One Quarter. Autumn and Spring. Three lecture hours each week. Required of undergraduate majors in the College of Arts. Prerequisite, Psychology 401 or 403. Mr. Wispé.

The nature of the social environment and the psychological structure of the social forces operating on the individual. Psychological description of the factors involved in the development of the social aspects of personality and the individuals sensitivity to the social environment. Description and evaluation of the methods of measurement and technique of investigation of the social psychologist.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

610. Adolescence. Three credit hours. One Quarter. Autumn, Winter, Spring. Three lectures each week. Prerequisite, Psychology 407 or 402. Mr. Horrocks.

A study of the outstanding characteristics of the adolescent boy or girl, the educational and social problems arising at this period, and means for dealing with these problems.

Not open to students who have credit for Psychology 510.

***627. Introduction to Aviation Psychology.** Three credit hours. Spring Quarter. Prerequisite, ten hours of psychology. Mr. Fitts.

A presentation of the psychological principles of perception, motivation, and acquisition of skill as they apply to the aircraft pilot. Topics to be discussed will include the following: (a) the critical requirements of various specialities in aviation; (b) selection problems and procedures; (c) training research; (d) the criterion problem—proficiency measurement; and (e) special psychophysiological problems encountered in flight.

Not open to students who have credit for Psychology 531.

PUBLIC SPEAKING
(See Speech)

‡ Credit shall not count toward graduation.
* Not given in 1957-1958.

RADIO

Office, 19 Derby Hall

COORDINATOR: PROFESSOR TYLER
SUPERVISORY COMMITTEE: PROFESSORS DAMERON, SUMMERS AND WEIGEL, ASSOCIATE PROFESSORS HIGGY AND WAGNER, ASSISTANT PROFESSOR EWING

Except for Radio 405 and Radio 655, complete description of these courses with prerequisites will be found in the listings of the designated departments in the appropriate college bulletins.

405. Introduction to Radio. Two credit hours. One Quarter. Autumn, Winter, Spring. Required of undergraduate students as prerequisite for all radio courses in Speech, Music, Education, Journalism, and Business Organization; required as prerequisite for students majoring in radio in any department. All Radio instructors.

An introduction to the whole field of non-engineering radio; history, structure, regulation, and support of broadcasting; organization and function of the individual station; fields of specialization, their potentialities and limitations; public responsibilities of radio as mass communication; the radio listeners. Lectures, discussion, observation, and individual problems.

Business Organization 520. Radio Station Management. Three credit hours. Winter Quarter.

Speech 560. Radio Speech. Three credit hours. One Quarter. Autumn, Winter, Spring.

Speech 565. Radio Program Production. Three credit hours. One Quarter. Autumn, Winter, Spring.
Not open to students who have credit for Speech 658.

Speech 566. Radio Laboratory Practice. One credit hour each Quarter. Autumn, Winter, Spring.
Not open to students who have credit for Speech 661.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

Business Organization 718. Broadcast Advertising Media. Three credit hours. Spring Quarter.

Education 601. Radio and Television in Education. Three credit hours. Autumn Quarter.

Journalism 605. News in Broadcasting I. Three credit hours. One Quarter. Autumn Winter, Spring.

Journalism 606. News in Broadcasting II. Two credit hours. One Quarter. Autumn, Winter, Spring.

Journalism 607. Special Radio and Television News Programs. Three credit hours. Spring Quarter.

Journalism 614. Law of the Press, Radio, and Television. Five credit hours. One Quarter. Autumn and Winter.

Speech 652. Broadcast Programs and Audiences. Three credit hours. One Quarter. Autumn, Winter, Spring.

Speech 654. Writing for Radio and Television. Three credit hours. One Quarter. Autumn, Spring.

Speech 662. Radio and Television Drama. Three credit hours. One Quarter. Autumn and Spring.

Speech 670. Radio and Television Program Planning. Two credit hours. One Quarter. Autumn and Winter.

Speech 760. Radio and Television Program Policies. Two credit hours. Spring Quarter.

Speech 764. Advanced Writing for Television. Two credit hours. Winter Quarter.

Not open to students who have credit for Speech 663.

Supervised Experience and Special Problems

655. Radio Broadcasting Problems. One to three credit hours. Autumn, Winter, and Spring Quarters. Three laboratory hours each week for each credit hour. This course may be repeated until three credit hours are obtained. Prerequisite, Radio 405, junior standing in any college of the University and permission of the station director. Station WOSU staff.

Supervised experience at Station WOSU.

Business Organization 799h. Special Problems in Business Organization. (Radio Advertising.) One to three credit hours. Autumn, Winter, and Spring Quarters.

Education 600j. Minor Problems. (Radio and Television Education.) One to four credit hours. Autumn, Winter, and Spring Quarters.

Education 800j. Seminar in Education. (Radio and Television Education.) Two to five credit hours. Autumn, Winter, and Spring Quarters.

Journalism 609. Advanced Laboratory Practice I. One credit hour. Autumn, Winter, and Spring Quarters.

Journalism 625. Journalism Internship. Two to five credit hours. All Quarters.

Journalism 802-803-804. Seminar in Journalism. (Radio.) Three to five credit hours. Autumn, Winter, and Spring Quarters.

Speech 700. Minor Problems in Speech. (Radio.) One to five credit hours. All Quarters.

Speech 860. Seminar in Radio and Television Programming. Two to five credit hours. Autumn, Winter, and Spring Quarters.

ROMANCE LANGUAGES AND LITERATURES

Office, 111 Derby Hall

PROFESSORS BABCOCK, HAVENS, DEMOREST, SCHUTZ, WARDROPPER, ASSOCIATE PROFESSORS ARMITAGE, ROGERS, DOOLITTLE, PRADAL, BORELLI, MEIDEN, AND SAPON, ASSISTANT PROFESSORS ROZZELL, CARLUT, BLANCO, AVALLE-ARCE, AND BLEND, INSTRUCTORS AND ASSISTANTS

FRENCH

401. Elementary French. Five credit hours. One Quarter. Autumn, Winter, Spring. Sections in this course are limited to twenty-five students. All instructors.

The elements of French grammar with abundant oral and written exercises. Special attention to ear training and oral practice. Elementary reading based on French geography, history, customs, and manners.

This course may not be taken simultaneously with Spanish 401-402, Italian 401-402, or by students who are not eligible to take English 416.

402. Elementary French. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, French 401. Sections in this course are limited to twenty-five students. All instructors.

The elements of French grammar with abundant oral and written exercises. Development of conversational skill. Reading, vocabulary building, attention to French idioms.

This course may not be taken simultaneously with Spanish 401-402, Italian 401-402.

SPANISH

401. Elementary Spanish. Five credit hours. One Quarter. Autumn, Winter, Spring. Sections in this course are limited to twenty-five students. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Special attention to ear training and oral practice. Elementary reading based on Spanish American geography, history, customs, and manners.

This course may not be taken simultaneously with French 401-402, Italian 401-402, or by students who are not eligible to take English 416.

402. Elementary Spanish. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Spanish 401. Sections in this course are limited to twenty-five students. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Development of conversational skill. Reading, vocabulary building, attention to Spanish idioms.

This course may not be taken simultaneously with French 401-402, or Italian 401-402.

RURAL ECONOMICS AND RURAL SOCIOLOGY

(See Agricultural Economics and Rural Sociology)

SOCIAL ADMINISTRATION

Office, 393 Stillman Hall

PROFESSOR SHIMP AND STAFF

511. Social Investigation and Social Statistics. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lecture periods and two two-hour laboratory periods each week. Prerequisite, Sociology 402, 407, or 410. Mr. Cornell.

Principles of social investigation, problems of planning and collecting data for social studies; analysis and presentation of numerical data in population, vital statistics, and social welfare.

Not open to students who have credit for Social Administration 638 or 639.

SOCIOLOGY AND ANTHROPOLOGY

Office, 112 Hagerty Hall

PROFESSORS SLETTO, BATCHELOR, BERRY, CUBER, MANGUS, OYLER, AND RECKLESS, ASSOCIATE PROFESSORS BENNETT, BULLOCK, JONASSEN, ROBBINS, SEEMAN, AND WOLFF, ASSISTANT PROFESSORS DINITZ, DYNES, ESTEL, HINKLE, NISSEN, AND BOURGUIGNON, INSTRUCTORS AND ASSISTANTS

SOCIOLOGY

401. Introductory Sociology. Five credit hours. One Quarter. Autumn, Winter, Spring. Mr. Cuber and staff.

A study of the fundamental concepts of sociology and an introduction to the analysis of social problems.

Not open to students who have credit for Sociology 410, 507, or 511.

402. Social Trends and Problems. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, five hours of sociology, or its equivalent with the permission of the instructor. All instructors.

Analysis of recent social trends and contemporary social problems.

Not open to students who have credit for Sociology 410 or 511.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

600. The Modern Family. Four credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Sociology 402, 407, 410, or 507, or the equivalent. Mr. Nissen, Mr. Oyler, Mr. Mangus.

An examination of the results of the impact of modern culture upon the family with special reference to such factors as size of family, member relationship, economic problems, divorce, desertion, status of women.

601. Types of Family Organization. Four credit hours. Winter Quarter. Prerequisite, Sociology 600. Mr. Oyler.

A survey of family organization from primitive times to the present; an analysis of the factors that entered into their development.

623. Collective Social Behavior. Three credit hours. One Quarter. Winter and Spring. Prerequisite, five hours of sociology, or its equivalent with the permission of the instructor. Mr. Seeman.

A study of the kinds of mass action arising in crowds, mobs, strikes, audiences, and the public. Problems and techniques of study and control.

625. Criminology. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, five hours of sociology or its equivalent with the permission of the instructor. Mr. Dimitz, Mr. Reckless.

The nature, variation and causes of crime and delinquency. Studies of criminal liability, criminal careers, and organized crime and racketeering.

ANTHROPOLOGY

501. Introduction to Anthropology. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, sophomore standing. Anthropology staff.

An introductory survey of the field of anthropology, with special emphasis upon ethnology and cultural anthropology. Human evolution; "racial" differences and their significance; theories of cultural patterning, function, and growth; the prehistoric development of culture; the social behavior of man as illustrated by the simpler societies.

503. Introduction to Ethnology. Five credit hours. Spring Quarter. Five class meetings each week. Lectures, motion pictures. Anthropology staff.

A comparative survey of tribal peoples in basic world areas—Asia, Africa, Oceania, North and South America—from the pre-contact phase to colonialism. Three or four representative groups will be selected and studied intensively during the course.

633. Dynamics of American Culture. Three credit hours. Autumn Quarter. Prerequisite, five hours of anthropology, or its equivalent with the permission of the instructor. Mr. Bennett.

A review of social scientific analysis of American customs, institutions, social systems and ideas, with emphasis on recent cultural anthropological studies.

639. Theory and Problems of Cultural Anthropology. Four credit hours. Winter Quarter. Prerequisite, twenty hours in allied subjects. Mr. Bennett.

Major theoretical viewpoints in cultural anthropology. Significance of the cultural approach. Applied anthropology and the relations of cultural anthropology to psychology and other social sciences.

SOILS

(See Agronomy)

SPANISH

(See Romance Languages and Literatures)

SPEECH
Office, 205 Derby Hall

PROFESSORS YEAGER, HARDING, SUMMERS, KNOWER, SANDERSON, MOSER, BLACK, McDOWELL, UTTERBACK, AND HULL, ASSOCIATE PROFESSORS EMSLEY SCHRECK, McGAW, CARMACK, IRWIN, FOTHERINGHAM, O'NEILL, AND DEWEY, ASSISTANT PROFESSORS RILEY, EWING, MALL, OYER, RICKEY, BROOKS, GOYER, LEWIS, MORRIS, ROSS, AND STROMSTA, INSTRUCTORS AND ASSISTANTS

401. Effective Speaking. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Open to freshmen. Mr. Knower and staff.

The principles of speech composition and delivery. Practice in preparing and presenting short informative, entertaining, and persuasive speeches. Audience analysis and control. Emphasis is placed upon speaking as a thinking process. The methods in which the student is trained are applicable to social and business conversation as well as to public address.

402. Group Discussion. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Open to freshmen. Mr. Utterback and staff.

405. Speech for Foreign Students. Five credit hours for undergraduates who make satisfactory progress in the course. One Quarter. Autumn and Winter. Five meetings each week. Open to freshmen. This course may be repeated. Mr. Black, Mrs. Morrison.

A course in speech improvement for students whose native language is not English. Intensive ear training to identify differences in sounds, stress, and intonation patterns and practice to acquire the correct articulation, pronunciation, and rhythm of American speech. Conversation, discussion, and reading to enlarge the speaking vocabulary and to acquaint the student with common idioms. Concurrent registration in English 406 is required.

410. Personal Speech Rehabilitation. No credit hours or three credit hours.† One Quarter. Autumn, Winter, Spring. Open to Freshmen. This course may be repeated. Mr. Moser, Mrs. Irwin and staff.

Enrollment in this course is largely made upon the basis of individual recommendation by one of the counseling agencies in the various colleges. Students with defective speech or hearing may be recommended for the course. Students enrolled are divided into sections according to their needs. Individual clinical attention is given when needed.

Sections for the following types of personel speech and hearing rehabilitation are scheduled each Quarter:

(a) Articulation and voice
(b) Stuttering
(c) Impaired hearing
(d) All types (Twilight School only)

Students enrolling for articulation and voice should register in 410 (a), for stuttering in 410 (b), and for impaired hearing in 410 (c). If their schedules will not permit registration at the appropriate hours in 410 (a), (b), or (c), they should register in 410 (d). Consult time schedule. (International students, see Speech 405.)

416. Introduction to Speech. Two credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Lectures, discussion, demonstrations, and readings. Mr. Yeager and staff.

This course is designed for students who wish to have a broad overview and understanding of speech. It includes consideration of basic speech processes, public speaking, theatre, radio-television programming, phonetics, and speech correction and hearing therapy.

417. Voice and Diction. Two credit hours. One Quarter. Autumn, Winter, Spring. Four class hours each week. Open to Freshmen. This course may be repeated. Students with clinically defective speech may enroll in the course only with previous and/or concurrent registration in Speech 405 or 410. Mr. Black, Mrs. Irwin.

Introductory study of the principles and practices necessary for the development of a satisfactory speaking voice. Designed for the student concerned about his speech adequacy. Emphasis is placed on:

(1) Objective attitude toward speech.
(2) Voice personality.
(3) Intelligibility of speech.
(4) Pronunciation.

Not open to students who have credit for Speech 411.

† Credit shall not count toward graduation.

470. Argumentation and Debate. Five credit hours. One Quarter. Autumn and Winter. Prerequisite, Speech 401. Mr. Rickey.

Analysis of arguments which arise in conversation, in discussion groups, and in public debate. Finding evidence. Constructing the brief. Argumentative composition and delivery. Refutation. Development of capacity to reply extemporaneously to objections. Frequent practice in analysis, evidence, brief-making, and in presenting oral arguments.

501. Principles of Effective Speaking. Three credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Open only to Juniors and Seniors. Mr. Knower and staff.

Practice in preparing and presenting short informative and persuasive speeches on technical material. The principles of speech composition. Audience analysis and control. Delivery and oral language.

Not open to students who have credit for Speech 401.

504. Speech Functions and Responsibilities of the Teacher. Three credit hours. One Quarter. Winter and Spring. Discussion, lectures, reading practice, observations. Prerequisite, five Quarters of university work. Miss Sanderson.

Emphasis will be placed upon a study of (1) the development of language skills in children from infancy through adolescence; (2) speech needs commonly found in the classroom; and (3) the teacher's voice as a factor in the educative process.

508. The Speech Situation. Two credit hours. One Quarter. Autumn and Spring. No prerequisite. Readings, discussion, observation, and reports. Mr. Knower.

A study of personal and social factors influencing the effectiveness of speech, including the responses of listeners to speakers as persons and the responses of speakers to listeners. The course deals with oral communication as a social process in terms of speaker-listener relationships.

509. Personal Speech Effectiveness. Two credit hours. One Quarter. Autumn, Winter, and Spring. Mr. Riley.

A course aimed at the improvement of speech habits and the development of increased speech effectiveness for students preparing for work in professions where better-than-ordinary speech abilities are required. Practice in the oral presentation of prose materials, with emphasis on reading effectiveness, phrasing, emphasis, enunciation and pronunciation.

560. Radio Speech. Three credit hours. One Quarter. Autumn, Winter. Spring. Prerequisite, sophomore standing. Mr. Niven and staff.

Fundamentals of microphone technique, with practice in speaking, acting and announcing for radio and television. Basic training in the planning and writing of radio and television talks. Voice recording for critical analysis.

565. Radio Program Production. Three credit hours. One Quarter. Autumn, Winter, Spring. Mr. Riley.

Training in basic techniques of producing and directing radio programs, with special attention to program forms in general use on local stations. Also, experience in the production of dramatic programs, and of remote and recorded program types.

566. Radio Laboratory Practice. One credit hour each Quarter. Autumn, Winter, Spring. Prerequisite, Speech 560 or 565. Mr. Niven.

Course may be repeated for a total of five credit hours. Practical experience in broadcasting over local radio stations, or laboratory work in specialized program fields under studio conditions.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

603. Group Thinking and Conference Leadership. Five credit hours. Winter Quarter. Prerequisite, junior standing or above and ten hours of speech or equivalent. Mr. Utterback.

The methods and procedures employed in setting up conferences and in leading conference and committee discussion.

652. Broadcast Programs and Audiences. Three credit hours. One Quarter. Autumn, Winter and Spring. Mr. Summers.

Broadcasting as a social force and as an agency of mass communication. Program types, basic program structure, elements of program effectiveness. Audience characteristics and listener preferences in relation to programs.

654. Writing for Radio and Television. Three credit hours. One Quarter. Autumn, Winter, and Spring. Prerequisite, Speech 652 and credit in at least two courses in Composition in either English or Journalism. Mr. Mall.

Practice in the planning and writing of continuities of types of radio and television programs used on local stations, including musical, documentary, variety, and special events programs.

*700. Minor Problems in Speech. One to five credit hours. All Quarters. Conference, library, and laboratory work. Prerequisite, permission of the instructor and chairman of the department. This course may be repeated for a total of fifteen credit hours.

SURVEY COURSES

COLLEGE OF AGRICULTURE

ASSISTANT DEANS HUTCHISON AND MOUNT, AND MR. POLLOCK

401. Survey of Agriculture. One credit hour. One Quarter. Autumn, Winter, Spring. Required of first Quarter students in all curricula in the College of Agriculture except Home Economics. Mr. Mount, Mr. Pollock.

A course dealing with problems of adjustment to college life; college aims; personality improvement; how to study; nature and importance of agriculture as an industry; vocational opportunities in agriculture; nature and purpose of the agricultural curricula; and choice of courses of study.

501. Survey of Agriculture. One credit hour. Winter Quarter. Lectures, readings, discussions and conferences. Mr. Hutchison.

A course dealing with the problems of employment in agriculture, business, and industry related to agriculture. Such problems as interviews; choosing a job; the employer; letters of application and economic security will be considered.

For Survey of Home Economics see Department of Home Economics. Course 400.

VETERINARY ANATOMY

Office, Sisson Hall

PROFESSOR VENZKE, DR. ANDRES, MR. DIESEM

451. Veterinary Anatomy. (For Students in Animal Science). Five credit hours. Spring Quarter. Five recitations each week. Dr. Andres.

Structures of the animal body as related to form and function. Lectures and demonstrations on specimens from the various anatomical systems of the horse, ox, pig, and chicken.

VETERINARY PHYSIOLOGY AND PHARMACOLOGY

Office, Sisson Hall

PROFESSOR POUNDEN, ASSOCIATE PROFESSOR SMITH

416. Comparative Animal Physiology. Four credit hours. Autumn Quarter. Four lecture hours including lecture demonstrations. For students interested in Agriculture. Prerequisite, Chemistry 411-412 and Zoology 401 or Veterinary Anatomy 451. Dr. Redding, Dr. Powers, Dr. Ray.

This course deals with the muscular system, nervous system, special senses, blood, circulation, and respiration.

417. Comparative Animal Physiology. Four credit hours. Winter Quarter. Four lecture hours including lecture demonstrations. Prerequisite, Veterinary Physiology and Pharmacology 416. Dr. Reddings, Dr. Powers, Dr. Ray.

This course includes a study of animal heat, digestion, excretion, metabolism, the endocrine glands, and reproduction.

* Not given in 1957-1958.

VETERINARY PREVENTIVE MEDICINE

Office, 8 Veterinary Laboratory

PROFESSOR HELWIG, ASSISTANT PROFESSOR JONES, MR. DRAYER, MR. BENDER, MR. HAY, MR. KNUDSON, MR. MECHLING

452. Basic Animal Hygiene. Three credit hours. Autumn Quarter. For students interested in animal hygiene. Prerequisite, sophomore standing in the University. Mr. Helwig, Mr. Jones.

This course is designed to acquaint the student with the causes of disease and the relationship of these causes to the animal's environment.

453. Applied Animal Hygiene. Three credit hours. Winter Quarter. Prerequisite, Veterinary Preventive Medicine 452 or its equivalent. Mr. Helwig, Mr. Jones.

A study of the various common diseases responsible for losses to the livestock industry, with special emphasis on control.

WELDING ENGINEERING

Office, 128 Industrial Engineering Building

PROFESSOR GREEN AND STAFF

‡415. Forging, Heat Treating, and Welding. Three credit hours. One Quarter. Winter and Spring. Six hours of laboratory and lecture each week. Practice in the principles of heat treating; oxyacetylene and electric welding.

The work in this course is designed to aid students preparing to teach industrial arts, to achieve skills, procedure, and information necessary for teaching these subjects at the secondary level.

Safety glasses must be worn in the laboratory. See footnote.

Not open to students who have credit for Welding Engineering 418.

Open to all majors in Agriculture except those in the five-year Agricultural Engineering curriculum.

‡418. Welding and Heat Treating. Three credit hours. One Quarter. Autumn, Winter, Spring. Six hours of lecture and laboratory each week. Agricultural Engineering, third year. Prerequisite, second year standing in the College of Engineering or the written permission of the Chairman of the Department of Welding Engineering.

Lecture material presenting the essentials of the welding and heat treatment processes from an engineering standpoint. Laboratory exercises in heat treating, oxyacetylene and metallic arc welding are given to demonstrate fundamental principles. Inspection and control of welding operations are considered.

Safety glasses must be worn in the laboratory. See footnote.

Open to agricultural students in the five-year Agricultural Engineering curriculum only.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

646. Welding Science and Its Applications. Three credit hours. Winter Quarter. Three lectures or recitations and six hours of preparation each week. Prerequisite, Engineering Mechanics 602 and fourth year standing in Engineering.

A basic study of welding and its applications.

‡ Courses Industrial Engineering 404, 405, 419, 420, 421 and Welding Engineering 415, 418, 739, 741, and 742 require the use of a pair of safety glasses; however, each student need own only one pair for all courses. In the event that the student must have prescription lenses, he shall obtain his safety glasses during the Quarter preceding their first use. This may be done through the Optometry Clinic, Room 15, Optometry Building, or through any registered optometrist.

These glasses are also a requirement in certain other courses involving shop laboratory work, inspection trips, and similar activities.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS D. F. MILLER, CUTRIGHT, DAMBACH, DeLONG, LANGLOIS, J. A. MILLER, JOSEPH N. MILLER, C. R. NEISWANDER, R. B. NEISWANDER, PETERSON, PRICE, RIFE, SLEESMAN, ASSOCIATE PROFESSORS BORROR, DAVIDSON, DUNHAM, DUSTMAN, FISK, HAUB, KNULL, PADDOCK, POLIVKA, PUTNAM, REESE, RINGS, TIDD, AND VENARD, ASSISTANT PROFESSORS BRITT, GILTZ, JOHNSON, GOOD, McINTOSH, MYSER, PLAINE, ROLSTON, AND WEAVER, INSTRUCTORS CRITES, FRANKLIN, GALLATI, CURATOR TRAUTMAN, AND ASSISTANTS

ZOOLOGY

401-402. General Zoology. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Five lecture-laboratory periods each week. Staff and assistants.

A course intended to give the student a general view of the nature of animal life and to point out its relation to man's economic and social activities. The chief topics considered are as follows: nature and structure of living substance, food and its energy transformations, the essentials of reproduction; a review of the animal groups with special stress on useful and harmful qualities; animal distribution and relation to environment; heredity and evolution with particular stress upon their relation to human affairs.

403. General Principles of Heredity. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lectures each week. Prerequisite, Zoology 401-402 or Botany 401-402 or equivalent. Mr. Rife, Mr. Paddock, Mr. Plaine, Mr. McIntosh.

An introductory study of the principles of heredity for students planning to major in biological sciences or to enter allied professional fields such as agriculture, medicine, or veterinary medicine. Demonstrations of living animals and plants are frequently used. The implications of genetic principles for an understanding of development, physiology, anatomy, and plant and animal breeding are discussed.

508. Ornithology. Three credit hours. Spring Quarter. One lecture, one laboratory period, and a field trip each week. Prerequisite, Zoology 401-402 or ten hours of biology. Mr. Putnam.

A study of the general biology and classifiaction of birds, with emphasis on the field identification of local species. Field trips on Saturdays.

Not open to students who have credit for Zoology 408.

509. Evolution. Five credit hours. Spring Quarter. Five lecture-discussion periods each week. Prerequisite, Botany 401-402 or Zoology 401-402 or equivalent. Mr. Tidd.

The principles of organic evolution. Demonstrations and discussion of the facts and theories underlying the evolution of men and other living things.

512. Heredity and Its Human Relations. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lectures each week. Mr. Rife.

A course especially designed for students who do not intend to major in the biological sciences. A study of the inheritance of physical and mental variations in human beings, and their distributions in different populations. The interaction of heredity and environment is given careful consideration and a scientific basis is laid for the study and analysis of racial variations. Analysis and comparisons of individual variations within the students in the class are made, including such traits as blood groups, dermatoglyphics and handedness.

Not open to students who have credit for Zoology 412.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

603. Fundamental Genetics. Five credit hours. One Quarter. Autumn and Winter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401 and 402 and Botany 401 and 402 or equivalent, and at least 15 Quarter hours of credit in any one or more of the following: chemistry, physics, and mathematics. Mr. Plaine.

For all students planning to specialize in genetics (plant or animal) or in the application

of genetics to their area of specialization. Lectures are devoted to a discussion of the basic experiments, principles, and concepts of theoretical and applied genetics. Laboratory work consists of breeding experiments with Drosophila and Neurospora.

605. Animal Behavior. Three or five credit hours. Autumn Quarter. Two lectures and four or six laboratory hours each week. Prerequisite, Zoology 401-402 and ten additional hours of biological science. Mr. J. A. Miller.

This course is devoted to the study of the neurological basis of animal reactions with emphasis on the mechanics of adjustment to heat, light, chemical and mechanical stimulation.

609. Animal Microtechnic. Five credit hours. Spring Quarter. Primarily a laboratory course, with discussions and assigned readings. Prerequisite, at least three Quarters' work in chemistry and at least twenty hours in biological sciences. The class is limited to twelve students and permission of the instructor must be obtained before registering for the course. Mr. J. N. Miller.

The theory and practice of microscopic methods, including fixing, imbedding, sectioning, mounting, and staining of animal tissues, and the effective use of modern microscopes and their accessories.

610. Animal Parasites. Five credit hours. One Quarter. Winter and Spring. Two lectures and three two-hour laboratory periods each week. Prerequisite, Zoology 401-402 and ten additional hours of biological science. Mr. J. N. Miller and assistants.

This course covers the general principles of parasitology, the morphology, life history, and classification of parasites, and their host relationships. Recommended for students preparing for medical or zoological work.

Not open to students who have credit for Zoology 504 or 619.

617. General Cytology. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, at least three Quarters' work in chemistry and at least twenty hours in biological sciences. Permission of the instructor must be obtained before registering for the course.

A study of the nature of protoplasm, the inner organization of living cells, and the fundamental phenomena of life.

618. The Cytological Basis of Genetics. Five credit hours. Winter Quarter. Two lecture and three two-hour laboratory periods each week. Prerequisite, Zoology 603. Mr. Paddock.

The correlation between the principles of genetics and the behavior of chromosomes, documented by examining cells under oil immersion during mitosis and meiosis in a variety of organisms.

620. Advanced Zoology of Vertebrates. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Zoology 509 and one Quarter in comparative anatomy are also desirable. Mr. Price.

A study of the various vertebrate groups, emphasizing their origin, phylogeny, classification, life histories, habits, distribution, and economic importance. Laboratory, museum, and field work. Especially recommended for students specializing in biological science.

625. Advanced Zoology of Invertebrates: The Protozoa. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each wek. Prerequisite, Zoology 401-402 or equivalent.

Zoology 625, 626 and 627 are fundamental courses designed to give the student a general knowledge of the structure, activities, life histories, and relationships of the invertebrate animals. It is not essential that these courses be taken in any particular order, and any one of the three may be elected independently of the others. Course 625 deals with the structure and activities of the protozoa, including both free-living and parasitic forms.

626. Advanced Zoology of Invertebrates. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Given in alternate years. Mr. Kostir.

A study of the structure, activities, life histories, and relationships of sponges, coelenterates, lower worms and amelids, together with the consideration of important biological principles illustrated by the groups. Note statement under Zoology 625.

*627. Advanced Zoology of Invertebrates. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Given in alternate years.

A study of the structure, activities, life histories, and relationships of arthopods, mollusca, echinoderms, and other groups together with the consideration of important biological principles illustrated by these. Note statement under Zoology 625.

629. Mammalogy. Three credit hours. Winter Quarter. Three two-hour lecture-laboratory periods each week. Prerequisite, Zoology 620 or its equivalent. Mr. Good.

A study of mammalian comparative morphology, taxonomy, life histories, habits, distribution, and economic importance. The world fauna is reviewed, with special emphasis upon mammals of the United States and particularly of Ohio.

630. The Interpretation of Biological Data. Five credit hours. One Quarter. Autumn and Winter. Four lectures and one two-hour laboratory period each week. Prerequisite, college algebra or equivalent and advanced standing in biological sciences. Mr. McIntosh.

An introductory course in the application of quantitative methods to biological data. Methods for describing data and drawing inferences based upon samples. Meaning and use of statistical tests of significance, including the t-test, the chi-square test, and the analysis of variance test.

632. Comparative Embryology. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, advanced standing in biological science. Mr. Price.

A survey of various modes of embryonic development, illustrated with both invertebrate and vertebrate types. Emphasis is placed on fundamental aspects and processes of development. Both descriptive and experimental methods will be used in the laboratory work.

†633. Invertebrate Zoology. Four credit hours. Second term. Prerequisite, twenty hours of biological science including Zoology 401-402 or equivalent. Given only at the Franz Theodore Stone Laboratory during the Summer Quarter.

Field and laboratory. The collection and identification of invertebrate animals, with the history or the development of methods of classification of invertebrates and emphasis upon the use of keys in identification.

Not open to students who have credit for Hydrobiology 621 or Zoology 621.

634. Biology of Birds Three credit hours. Winter Quarter. Two lectures and one laboratory period each week. Prerequisite, Zoology 408 or equivalent. Mr. Putnam.

This course deals with structural and physiological characters of birds, migration, reproductive behavior, territory, ecology, problems of bird population, and techniques of studying birds. The course is designed for majors in vertebrate zoology, ornithology, wildlife conservation and ecology.

636. Principles of Animal Ecology. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods or field trips each week. Prerequisites, Zoology 401-402, Botany 401-402. It is recommended that the student have additional training in one or more of the following areas: plant ecology, origin and classification of soils, geology, and climatology. Extra fee assessed for field trip.

640. Wildlife Conservation. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week with several Saturday field trips. Prerequisite, twenty hours of biological science. Mr. Good.

An introductory course in the conservation and management of wildlife resources of the United States. The course is designed to acquaint students with the important wild animals of the United States, their value, relation to man, and methods of regulating their abundance. Particular attention will be given to Ohio problems.

641. Methods and Techniques in Wildlife Management. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, twenty hours of biological science and permission of the instructor must be obtained. Mr. Good.

* Not given in 1957-1958.

† Not given during the academic year, 1957-1958.

A study of research and management techniques employed in the field of wildlife conservation. Consideration will be given to methods of collecting and preserving biological specimens, making food habits studies, measuring animal populations, field mapping, interpretation of animal signs in the field, control methods, and other practical management techniques. This course is especially designed for majors in the field of wildlife conservation.

*642. Field Zoology. Four credit hours. First term. Prerequisite, twenty hours of biological science including Zoology 401-402 or equivalent. Of special interest to Biology teachers. Given only at The Franz Theodore Stone Laboratory during the Summer Quarter.

Field and laboratory identification of aquatic and terrestrial vertebrates and invertebrates of the region, in relation to habitats occupied.

643-644-645. Wildlife Conservation Conference. One credit hour. Autumn, Winter, and Spring Quarters. Prerequisite, twenty hours of biological science.

Review of current research. Reports on subjects relating to wildlife conservation by visiting techniques. Reports on special subjects assigned to students.

†652. Limnology. Four credit hours. First term. Prerequisite, Zoology 401-402 or equivalent, fifteen additional hours in biology, ten Quarter hours in chemistry and ten Quarter hours in physics. Given only at the Franz Theodore Stone Laboratory during the Summer Quarter.

Field and laboratory, studies of the physical, chemical and biological factors which determine biological productivity in Lake Erie and certain waters along the south shore of the lake. Field studies include plane-table mapping, the determination of dissolved gases and hydrogen-ion concentration, depth of light penetration, as well as quantities of plankton and bottom fauna.

Not open to students who have credit for Hydrobiology 650 and Zoology 650.

*654. Advanced Ornithology. Four credit hours. First term. Lectures, field trips, laboratory work, and assigned readings. Prerequisite, Zoology 408 or its equivalent. Given only at The Franz Theodore Stone Laboratory during the Summer Quarter.

Topics include instinctive behavior in the life of birds, the breeding cycle, social relations, territory, ecology, characteristics of populations, and techniques in field study of birds.

Not open to students who have credit for Hydrobiology 655 or Zoology 655.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. A student may enter at the beginning of any Quarter. General prerequisites must include satisfactory preparation for individual work in the field of the chosen problem. The student may have free choice of the instructor under whom he desires to work, but the permission of the instructor must be obtained before registering for the course.

(a) Animal Behavior. Mr. D. F. Miller, Mr. J. A. Miller, Mr. J. G. Haub.
(b) Animal Ecology. Mr. Price, Mr. Borror, Mr. Dustman, Mr. Good, (Aquatic) Mr. Britt.
(c) Embryology and Vertebrate Zoology. Mr. J. A. Miller, Mr. Price.
(d) Biometry. Mr. McIntosh.
(e) Genetics. Mr. McIntosh, Mr. Paddock, Mr. Rife, Mr. Plaine.
(f) Invertebrate Zoology. Mr. Britt.
(g) Ornithology. Mr. Borror, Mr. Putnam, Mr. Reese.
(h) Parasitology. Mr. J. N. Miller Mr. Tidd, Mr. Venard.
(i) Protozoology and Cytology.
(j) Teaching of Biology. Mr. Haub and Mr. D. F. Miller.
(k) Wildlife Management. Mr. Dustman, Mr. Good.
(l) General Limnology. Mr. Britt.

705. Physiological Genetics. Five credit hours. Spring Quarter. Five lecture periods each week. General prerequisites must include Zoology 603, a course in comparative embryology, and a course in bio-chemistry or cellular physiology (Zoology 632, Agricultural Bio-chemistry 601, Physiology 628, or their equivalents, are recommended.) Mr. Plaine.

A consideration of the theoretical and experimental aspects of physiological, biochemical, and developmental genetics.

* Not given in 1957-1958.
† Not given during the academic year, 1957-1958.

706. Population Genetics. Three credit hours. Winter Quarter. Prerequisite, Zoology 603 or 630 or equivalent. Mr. McIntosh.

A study of the principles underlying the effects of mutation, selection, migration, and random drift upon the frequency of particular genes in natural living populations.

*707. Human Genetics. Three credit hours. Winter Quarter. Three lecture-discussion periods each week. Prerequisite, Zoology 603 or 630 or equivalent. Mr. Rife.

This is a study of human inheritance, with especial emphasis on the methods of research in this branch of genetics. Mathematical procedures employed in research in human genetics are intensively studied. The implications of the science of genetics for advanced students in the social and biological sciences are stressed.

Not open to students who have credit for Zoology 601.

*708. Quantitative Genetics. Three credit hours. Autumn Quarter. Three lecture periods each week. Prerequisite, Zoology 603, Zoology 630, and two Quarters of calculus, or equivalent. Mr. McIntosh.

Design and analysis of experiments in quantitative genetics; estimation of components of variance due to genetic and non-genetic causes; heritability and interpretation of heritability estimates; selection, selection indices, and expected genetic advance under selection; effect of various systems of breeding on means and variances of quantitative characters in domestic animals and cultivated plants.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

550. General Entomology. Five credit hours. One Quarter. Autumn and Winter. Five lecture-laboratory periods each week. Mr. DeLong, Mr. Borror, Mr. Fisk.

An introductory course dealing with the general characterization of insects, and the biology and habits of the more important orders and families.

Not open to students who have credit for Zoology 450.

551. Insect Pests and Their Control. Five credit hours. One Quarter. Autumn and Spring. Five lecture-laboratory periods each week. Mr. DeLong, Mr. Davidson.

This course deals with the important insect problems of rural and urban society with emphasis on habits of insects, latest control methods, and types of injury to plants, man, domestic animals, and stored products.

Not open to students who have credit for Entomology 451.

555. Bee Culture. Three credit hours. Autumn Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Zoology 401 or Botany 401. Mr. Dunham.

This course is designed to give the student an introduction in the field of bee culture. Special attention is given to the social organizations of honeybees; their life habits; approved methods in bee management; queen rearing; diagnosis and control of bee diseases; and other aspects in the production and marketing of honey and beeswax. Laboratory time will be spent in the college apiary, in making field trips, or in library work.

566. Horticulture Entomology. Five credit hours. One Quarter. Winter and Spring. Five lecture-laboratory periods each week. Prerequisite, Entomology 550. Mr. Davidson.

Designed for students specializing in the Department of Horticulture. A study of the characteristics, biology, ecology, and control of insect pests attacking ornamental shade trees and shrubs; orchards and small fruits; and vegetable and greenhouse crops. Field and laboratory studies will be made on recognition of types of injury, the stages of the insect causing it, and the preparation and application of the proper remedial measures.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

640. Advanced Economic Entomology. Five credit hours. Autumn Quarter.

* Not given in 1957-1958.

Three lectures and two two-hour laboratory periods each week. Prerequisite, twenty hours of biological science. Courses in general and economic entomology are desirable. Mr. Davidson.

An advanced course covering the principles of insect control. Field and laboratory studies will be made of major insect control problems. New chemicals for insect control will be studied.

650. Entomology for Biology Majors. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Recommended especially for biology teachers and majors in other fields.

Deals with general characteristics of insects, their morphology, metamorphosis, and principles of control. Laboratory consists of recognizing representatives of more important families, how to make insect collections, use collecting equipment; methods of preserving, culturing, and preparing class demonstrations.

651. External Morphology of Insects. Five credit hours. Autumn Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, ten hours of zoology and ten hours of entomology. Mr. Borror.

A study of the comparative external morphology of insects, with special emphasis on evolutionary trends and on the taxonomic applications of morphology.

652. Evolution of Insects. Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, ten hours of zoology and ten hours of entomology. Mr. Borror.

An analysis of the mechanisms involved in evolution, with special reference to insects. The subjects treated include reproductive mechanisms metamorphosis and life history, mechanisms of heredity, the nature and behavior of genes, factors effecting gene frequencies, the role of environmental factors in evolution, distribution, variation, speciation mechanisms, and the paleontological record of insects.

653. Principles of Insect Toxicology. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, elementary courses in zoology and in general and economic entomology or equivalent. A background of training in chemistry is desirable. Mr. Fisk.

This course treats of the physiological action of insecticides and other toxic materials.. Methods of securing, evaluating and presenting toxicological data are stressed.

654. Applications of Insect Toxicology. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Entomology 653. Dr. Ware.

This course deals with the physiological action of fumigants, attractants, and repellents, as well as the application of toxicology to insect control problems. Laboratory experience in formulating and applying insecticides is afforded.

655. Insects in Relation to Disease. Three or five credit hours. One Quarter. Autumn and Spring. Three lectures each week. Students who register for five hours will have two two-hour laboratory periods each week in addition. Prerequisite, Zoology 401-402 or equivalent. Introductory courses in Entomology, Bacteriology, and Animal Parasites will be helpful. Mr. Venard.

This course gives students interested in Animal Science, Bacteriology, Entomology Medicine, Veterinary Science, and others an opportunity to become familiar with the recognition characteristics, habits, and controls of immature and adult insects, ticks, mites, and other arthropods that attack man and domestic animals. Considerable attention is paid to those species that transmit various diseases of man and animals. Especially recommended for premedical students.

658. Insect Ecology. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Entomology 550, 650 or equivalent; 705 and 706 are desirable. Mr. DeLong.

A review of the general principles of animal ecology with special reference to insects. This involves the study of climate, the relationship of temperature, humidity, precipitation, and evaporation to the biology of insects, the problems of hibernation, aestivation, and such applied problems as the effect of cropping, rotation, and cultivation upon the development of insect populations.

660. Entomological and Zoological Literature and Principles of Taxonomy. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, fifteen hours of courses in Zoology or Entomology at the 600 level or above. Mr. Borror.

A study of the principal references to zoological and entomological literature and a survey of publications, intended to familiarize the student with the past and present literature in

zoology and entomology. A study of the principles of taxonomy, codes of nomenclature, and the various techniques used in taxonomic work. The laboratory will consist of practical work on the literature and the taxonomy of a selected group or groups of animals.

661. Insect Pollination. Two credit hours. Autumn Quarter. Two lecture-demonstrations each week. Prerequisite, at least ten hours of zoology or equivalent. Mr. Dunham.

A course for majors and non-majors dealing with insects of great economic importance, particularly in pollination of fruit and forage crops in production of food by-products such as honey, in production of products used in industry, and in their relationships to man, animals, and soil fertility.

662. Household Insects. Three credit hours. Winter Quarter. Three lectures each week. Prerequisite, Entomology 551 or equivalent. Mr. DeLong.

A study of the characteristics, biology, and control of insects that annoy man or damage his buildings or goods therein. The course is also intended to acquaint the students with present practices and future possibilities of the pest control industry. Field trips will be made to observe the work of local pest control operators.

701. Special Problems. Two to five credit hours. Autumn, Winter, and Spring Quarters. A student may enter at the beginning of any Quarter. General prerequisites must include satisfactory preparation for individual work in the field of the chosen problem. The student may have free choice of the instructor under whom he desires to work, but permission of the instructor must be obtained before registering for the course.

(a) Apiculture and Insect Pollination. Mr. Dunham.
(b) Immature Insects and Biological Control. Mr. Peterson, (Aquatic) Mr. Britt.
(c) Insects Causing or Transmitting Diseases of Animals. Mr. Venard, Mr. Davidson, Mr. Borror.
(d) Insects Causing or Transmitting Diseases of Plants. Mr. DeLong, Mr. Davidson.
(e) Insect Control. Mr. DeLong, Mr. Davidson Mr. Fisk.
(f) Insect Ecology. Mr. DeLong, Mr. Borror, (Aquatic) Mr. Britt.
(g) Insect Morphology. Mr. Borror.
(h) Insect Physiology and Toxicology. Mr. Fisk.
(i) Insect Taxonomy. Mr. DeLong, Mr. Davidson, Mr. Knull, Mr. Borror.
(j) Laboratory Techniques and Rearing Methods. Mr. Peterson.
(k) Insect Behavior. Mr. DeLong, Mr. Fisk.
(l) Field and Experiment Station Problems. Mr. DeLong, Mr. Davidson, Mr. C. R. Neiswander, Mr. R. B. Neiswander, Mr. Cutright, Mr. Sleesman.

705. Systematic Entomology. Five credit hours. Spring Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Entomology 651. Mr. Borror.

A survey of the various insect groups, with emphasis on the characters used in determining adult insects to family and beyond. Some attention is given to methods of collecting, mounting, and preparing insect material for study. All the orders are covered except the Trichoptera, Lepidoptera, Diptera, and Hymenoptera.

706. Systematic Entomology. Five credit hours. Winter Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Entomology 651. Mr. Borror.

A continuation of Entomology 705, covering the Trichoptera, Lepidoptera Diptera, and Hymenoptera.

712. Immature Insects. Three or five credit hours. Autumn Quarter. One lecture and two or four two-hour laboratory periods each week. Prerequisite, Entomology 550 or 551, 651, and 652, 705, and 706, or equivalent. Mr. Peterson.

This course gives a student an opportunity to become familiar with the characters used in determining families, genera and species of immature stages of insects, especially larvae. The laboratory work deals primarily with the determination of larvae. Library and field work are included. A student collection of immature stages of insects determined to families is required. Topics such as external morphology of immature insects and methods of collecting, killing, preservation, and preparation of material are discussed.

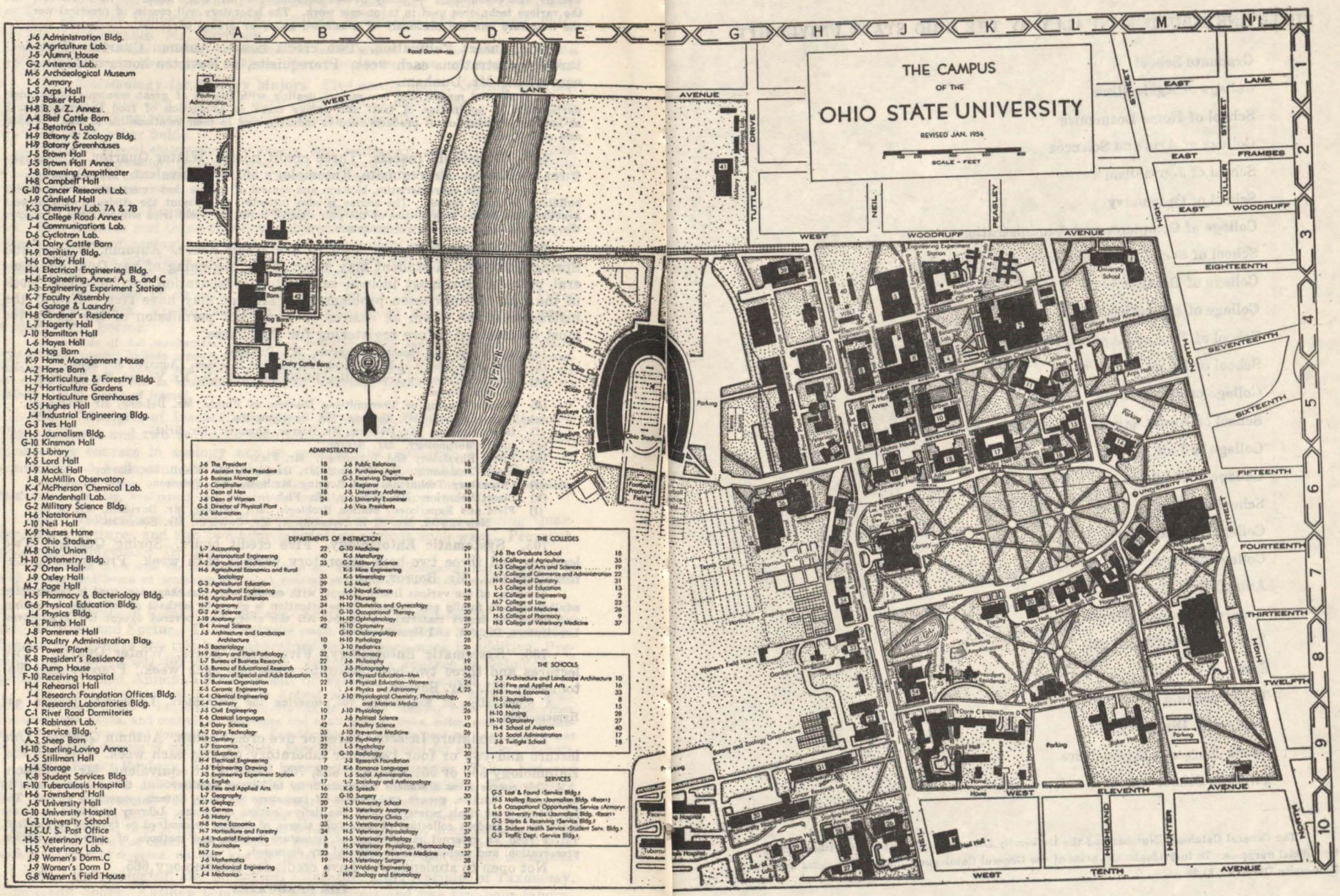
Not open to students who have credit for Entomology 665.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

J-6 Administration Bldg.
A-2 Agriculture Lab.
J-5 Alumni House
G-2 Antenna Lab.
M-6 Archaeological Museum
L-6 Armory
L-5 Arps Hall
L-9 Baker Hall
H-8 B. & Z. Annex
A-4 Beef Cattle Barn
J-4 Betatron Lab.
H-9 Botany & Zoology Bldg.
H-9 Botany Greenhouses
J-5 Brown Hall
J-5 Brown Hall Annex
J-8 Browning Ampitheater
H-8 Campbell Hall
G-10 Cancer Research Lab.
J-9 Canfield Hall
K-3 Chemistry Lab. 7A & 7B
L-4 College Road Annex
J-4 Communications Lab.
D-6 Cyclotron Lab.
A-4 Dairy Cattle Barn
H-9 Dentistry Bldg.
H-6 Derby Hall
H-4 Electrical Engineering Bldg.
H-4 Engineering Annex A, B, and C
J-3 Engineering Experiment Station
K-7 Faculty Assembly
G-4 Garage & Laundry
H-8 Gardener's Residence
L-7 Hagerty Hall
J-10 Hamilton Hall
L-6 Hayes Hall
A-4 Hog Barn
K-9 Home Management House
A-2 Horse Barn
H-7 Horticulture & Forestry Bldg.
H-7 Horticulture Gardens
H-7 Horticulture Greenhouses
L-5 Hughes Hall
J-4 Industrial Engineering Bldg.
G-3 Ives Hall
H-5 Journalism Bldg.
G-10 Kinsman Hall
J-5 Library
K-5 Lord Hall
J-9 Mack Hall
J-8 McMillin Observatory
K-4 McPherson Chemical Lab.
L-7 Mendenhall Lab.
G-2 Military Science Bldg.
H-6 Natatorium
J-10 Neil Hall
K-9 Nurses Home
F-5 Ohio Stadium
M-8 Ohio Union
H-10 Optometry Bldg.
K-7 Orton Hall
J-9 Oxley Hall
M-7 Page Hall
H-5 Pharmacy & Bacteriology Bldg.
G-6 Physical Education Bldg.
J-4 Physics Bldg.
B-4 Plumb Hall
J-8 Pomerene Hall
A-1 Poultry Administration Bldg.
G-5 Power Plant
K-8 President's Residence
D-6 Pump House
F-10 Receiving Hospital
H-4 Rehearsal Hall
J-4 Research Foundation Offices Bldg.
J-4 Research Laboratories Bldg.
C-1 River Road Dormitories
J-4 Robinson Lab.
G-5 Service Bldg.
A-3 Sheep Barn
H-10 Starling-Loving Annex
L-5 Stillman Hall
H-4 Storage
K-8 Student Services Bldg.
F-10 Tuberculosis Hospital
H-6 Townshend Hall
J-6 University Hall
G-10 University Hospital
L-3 University School
H-5 U. S. Post Office
H-5 Veterinary Clinic
H-5 Veterinary Lab.
J-9 Women's Dorm C
J-9 Women's Dorm D
G-8 Women's Field House



ADMINISTRATION

J-6 The President	18	J-6 Public Relations	18
J-6 Assistant to the President	18	J-6 Purchasing Agent	18
J-6 Business Manager	18	G-5 Receiving Department	
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G-5 Director of Physical Plant		J-6 Vice Presidents	18
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H-6 Agricultural Extension	35	H-10 Nursing	28
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G-2 Air Science	41	G-10 Occupational Therapy	30
J-10 Anatomy	26	H-10 Ophthalmology	28
B-4 Animal Science	42	H-10 Optometry	27
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H-9 Botany and Plant Pathology	32	J-10 Pediatrics	26
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K-4 Chemistry	2	J-10 Physiological Chemistry, Pharmacology, and Materia Medica	26
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K-6 Classical Languages	17	J-6 Political Science	19
B-4 Dairy Science	42	A-1 Poultry Science	43
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L-5 Education	13	G-10 Radiology	30
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J-5 Engineering Drawing	10	K-6 Romance Languages	17
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L-6 Fine and Applied Arts	16	K-6 Speech	17
L-7 Geography	22	G-10 Surgery	30
K-7 Geology	20	L-3 University School	1
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H-8 Home Economics	33	H-5 Veterinary Medicine	37
H-7 Horticulture and Forestry	34	H-5 Veterinary Parasitology	37
J-4 Industrial Engineering	5	H-5 Veterinary Pathology	38
H-5 Journalism	8	H-5 Veterinary Physiology, Pharmacology	37
M-7 Law	23	H-5 Veterinary Preventive Medicine	37
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L-5 Music	15
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G-5 Lost & Found (Service Bldg.)
H-5 Mailing Room (Journalism Bldg. (Rear))
L-6 Occupational Opportunities Service (Armory)
H-5 University Press (Journalism Bldg. (Rear))
G-5 Stores & Receiving (Service Bldg.)
K-8 Student Health Service (Student Serv. Bldg.)
G-5 Traffic Dept. (Service Bldg.)

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School of Home Economics

College of Arts and Sciences

School of Journalism

School of Optometry

College of Commerce and Administration

School of Social Administration

College of Dentistry

College of Education

School of Fine and Applied Arts

School of Music

College of Engineering

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